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(71)Applicant : CASIO ELECTRON MFG CO LTD
CASIO COMPUT CO LTD

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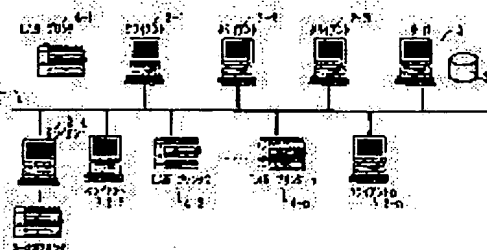
(72)Inventor : KANDA MASAO
KUZUNO OSAMU
SUZUKI MAKOTO

(54) PRINTING SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a printing system capable automatically updating print control software if needed based on especially the desire of a user, and collectively the updating print control software from a maker in the printing system including printers connected to a computer network.

SOLUTION: In this system, at the time of using print control software of the printer 4-1, for example, the printer 4-1 gives the update recognition request of print control software to a print server 3 at the time of supplying power. When new print control software is registered in the print server 3, new print control software is supplied to the printer 4-1, and the updating is made. The printer 4-1 can print with new print control software unless print control software is updated and the print processing by the latest version can always be executed.



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CLAIMS

[Claim(s)]

[Claim 1] In the printing system in the computer network with which printer equipment was connected with the print server An updating demand means for it to be prepared in said printer equipment and to perform the updating demand of print control software, A transmitting means for it to be prepared in said print server and to judge the existence of renewal of said print control software to said updating demand, and to transmit new print control software when said print control software needs to be updated, The printing system characterized by updating means to be formed in said printer equipment and to update front print control software to said new print control software, and having **.

[Claim 2] Said print server is a printing system according to claim 1 characterized by having a storage means to memorize said new print control software.

[Claim 3] It is the printing system according to claim 1 characterized by making a judgment of the existence of the print control software by said print server by the model of printer.

[Claim 4] In the printing system in the computer network which has a user server and printer equipment and was connected to a manufacturer's server An updating demand means for it to be prepared in said user server and to give the updating demand of print control software to said manufacturer server, A transmitting means for it to be prepared in said manufacturer server and to judge the existence of renewal of said print control software to said updating demand, and to transmit new print control software when said print control software needs to be updated, The printing system characterized by having an updating means to be formed in said user server and to update front print control software to said new print control software.

[Claim 5] Said manufacturer server is a printing system according to claim 4 characterized by having a storage means to memorize said new print control software.

[Claim 6] It is the printing system according to claim 4 characterized by making a judgment of the existence of the print control software by said manufacturer server by the model of printer.

[Claim 7] The printing system according to claim 1 characterized by performing printing processing which shows that the update process was performed by corresponding printer equipment when renewal of said print control software was performed.

[Claim 8] The printing system according to claim 1 characterized by performing printing processing which shows that the update process was performed to the display of the corresponding computer of a client when renewal of said print control software is performed.

[Claim 9] They are claim 1 characterized by performing renewal of said print control software using a storage, and a printing system given in four.

[Claim 10] The printing system according to claim 9 characterized by memorizing the printer driver which corresponds to said storage with said print control software.

[Claim 11] Said print control software is a printing system 1 characterized by being supplied from the service center of said printer equipment, and supplying printer equipment through a Network Server, or given in four.

[Claim 12] A storage possible [computer / judged the existence of renewal of said print control software to the updating demand function of performing the updating demand of print control software, and said updating demand, and stored the program contain the instruction which makes a

computer perform the transmitting function transmit new print control software, and the updating function of updating front print control software to said new print control software when said print control software needs to be updated / said] in reading.

[Claim 13] The updating demand function to give the updating demand of print control software to said manufacturer server, The transmitting function which judges the existence of renewal of said print control software, and transmits new print control software to said updating demand when said print control software needs to be updated, The storage which said computer which stored the program including the instruction which makes a computer perform updating which is prepared in said user server and updates front print control software to said new print control software can read.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a printing system including the airline printer connected to the computer network.

[0002]

[Description of the Prior Art] In recent years, joint use of the printer equipment with which computer networks, such as LAN (Local Area Network), are widely used, and are used for a network is carried out to two or more clients. In such a network, the program which delivers and receives data between a network and printer equipment is also included in the control software used for printer equipment. And the maintenance of the control software uses the rewriting control software registered into the print server, and is performing rewriting processing of control software by the function of a printer the basis of management of a network administrator, and own.

[0003] Drawing 22 is a flow chart explaining rewriting processing of the control program of conventional printer equipment. As shown in this drawing, a print server outputs print data or printing control data, and printer equipment performs reception of the print data from a printer server, or printing control data (step 1 (W shows drawing 25 hereafter)). Next, analysis processing of the received data is performed (W2).

[0004] Here, when the received data are the usual print data (W2 is print data), the usual printing processing is performed (W3). On the other hand, when the received data are print control data (W2 is an updating instruction), reading processing of print control data is performed (W4). In addition, when the received data are other instructions (W2 is other instructions), corresponding instruction processing is performed (W5).

[0005] Here, when the received data are print control data (W2 is an updating instruction), reading processing of print control data is performed as mentioned above (W4), and print control data before being written in memory is updated (W6).

[0006] In addition, the processing shown in this drawing by the dotted line is a flow in the case of receiving print data or print control data from a local port, for example, is an example in case the direct computer is connected to printer equipment. Also in this case, print data or print control data is analyzed by analysis processing, and when it is print control data, print control data before being written in the memory in printer equipment is updated by new print control data (W4, W6).

[0007]

[Problem(s) to be Solved by the Invention] The following problems occur in the above conventional printing systems.

(b) First, in the conventional system, when print control data was updated, the network administrator of the printing system concerned managed and judged the use condition of target printer equipment, and was performing rewriting processing of print control data if needed. For this reason, in the conventional printing system, the print control data was able to be updated only to the printer equipment of the range which a network administrator can manage.

[0008] (b) On the other hand, although the renewal of print control data may be based on a request of a user, it is based on a request from a manufacturer side in many cases. For example, renewal of print control data is needed for all users in many cases for the functional enhancement of printer

equipment, the cure against a bug, etc. However, in the conventional printing system, the print control data is individually updated to the printer equipment which serves as a candidate for updating such even case.

[0009] The technical problem of this invention offers the printing system which updates print control data automatically based on a user's hope when required, and can be performed by putting in block an update process of the print control data from a manufacturer in view of the above-mentioned conventional actual condition.

[0010]

[Means for Solving the Problem] In the printing system in the computer network with which printer equipment was connected with the print server at least in order that invention according to claim 1 might solve the above-mentioned technical problem An updating demand output means for it to be prepared in said printer equipment and to perform the updating demand of print control software, A transmitting means for it to be prepared in said print server and to judge the existence of renewal of said print control software to said updating demand, and to transmit new print control software when said print control software needs to be updated, It is prepared in said printer equipment and can attain by offering the printing system which has an updating means to update front print control software to said new print control software.

[0011] For example, printer equipment is predetermined timing and performs the updating demand of print control software. This predetermined timing may be the current supply to printer equipment, or even by setup of the fixed timing by the timer, is good and outputs the updating demand of print control software according to such predetermined timing. And according to this output, by the print server side, renewal of print control software is judged, new print control software is transmitted to printer equipment, and new print control software is updated by the printer equipment side.

[0012] Thus, since an update process of print control software is ensured when the updating check of the print control software of printer equipment is surely performed in a power up etc. with printer equipment and it has changed to new print control software by constituting, the print control software of the latest version can always perform printing processing.

[0013] The publication of claim 2 is the configuration of having a storage means by which said print server memorizes said new print control software, in said invention according to claim 1. That is, from those, such as a communication line and a floppy disk, by the print server, supply is received and always new print control software is stored in the storage means.

[0014] Thus, by constituting, it can respond immediately to the updating acknowledge request of printer equipment. It is the configuration that the publication of claim 3 makes a judgment of the existence of the print control software by said print server by the model of printer in said invention according to claim 1.

[0015] Here, user ID and Printer ID are contained in the model of printer, and a model number (model No) is also contained. And according to such information, a print server supplies the print control software of printer equipment with an updating demand to corresponding printer equipment. In the printing system in the computer network which has a user server and printer equipment and was connected to a manufacturer's server in order that invention according to claim 4 might solve the above-mentioned technical problem An updating demand means for it to be prepared in said user server and to give the updating demand of print control software to said manufacturer server, A transmitting means for it to be prepared in said manufacturer server and to judge the existence of renewal of said print control software to said updating demand, and to transmit new print control software when said print control software needs to be updated, It is prepared in said user server and can attain by offering the printing system which has an updating means to update front print control software to said new print control software.

[0016] This invention is processing of as opposed to the updating demand of the print control software between a print server and a manufacturer server to invention of said claim 1 having been processing to the updating demand of printer equipment and the print control software between print servers.

[0017] For example, a print server is predetermined timing and performs the updating demand of print control software. This predetermined timing is set up by a timer etc. and outputs the updating

demand of print control software according to such predetermined timing. In a manufacturer server side, renewal of print control software is judged, new print control software is transmitted to a print server, and new print control software is updated by the print server.

[0018] Thus, since an update process of print control software is ensured in a print server when the updating check of the print control software of a print server is surely performed to a print server according to deadline of a timer and it has changed to new print control software by constituting, the print control software of the latest version can always be prepared for a print server.

[0019] The publication of claim 5 is the configuration of having a storage means by which said manufacturer server memorizes said new print control software, in said invention according to claim 4. This example corresponds to the publication of above-mentioned claim 2, from those, such as a communication line and a floppy disk, by the manufacturer server, receives supply of always new print control software, and stores it in the storage means. Thus, by constituting, it can respond immediately to the updating acknowledge request of a print server.

[0020] It is the configuration that the publication of claim 6 makes a judgment of the existence of the print control software by said manufacturer server by the model of printer in said invention according to claim 4.

[0021] This example corresponds to the publication of above-mentioned claim 3, and user ID and Printer ID are contained in the model of printer, and a model number (model No) is also contained. And according to such information, a manufacturer server supplies the print control software of printer equipment with an updating demand to a corresponding print server. In said invention according to claim 1, the publication of claim 7 is the configuration that printing processing which shows that the update process was performed by corresponding printer equipment is performed, when renewal of said print control software is performed.

[0022] Thus, by constituting, when new print control software is built into printer equipment, the printout of the fact is carried out, and a user can know renewal of print control software easily.

[0023] In said invention according to claim 1, the publication of claim 8 is the configuration that printing processing which shows that the update process was performed to the display of the corresponding computer of a client is performed, when renewal of said print control software is performed.

[0024] This example displays the fact on the corresponding display of a client, when the still newer print control software to printer equipment is incorporated, and it tells renewal of print control software certainly.

[0025] It is the configuration that the renewal of said print control software performs the publication of claim 9 in said invention according to claim 1 or 4 using a storage. Here, as a storage, there are storages, such as a floppy disk, a hard disk, and a compact disk, and print control software is built into these storages, and it is used for renewal of print control software.

[0026] The publication of claim 10 is the configuration that the printer driver which corresponds to said storage with said print control software is also memorized, in the publication of said claim 9.

[0027] Thus, by constituting, a printer driver and corresponding print control software can be updated using one storage, and install of a printer driver and print control software can be performed correctly.

[0028] The publication of claim 11 is the configuration that said print control software is supplied from the service center of said printer equipment, in said claim 1 or invention of 4. Here, a manufacturer, the total dealer, etc. of the above-mentioned printer equipment may correspond, and a service center may be constituted so that it not only supplies print control software, but a direct print server and printer equipment may be supplied through a Network Server from a service center.

[0029] The updating demand function to perform the updating demand of print control software in order that invention of claim 12 may solve the above-mentioned technical problem, The transmitting function which judges the existence of renewal of said print control software, and transmits new print control software to said updating demand when said print control software needs to be updated, It can attain by offering the storage which said computer which stored the program including the instruction which makes a computer perform the updating function which

updates front print control software to said new print control software can read.

[0030] Moreover, the updating demand function to give the updating demand of print control software to said manufacturer server in order that invention of claim 13 may solve the above-mentioned technical problem, The transmitting function which judges the existence of renewal of said print control software, and transmits new print control software to said updating demand when said print control software needs to be updated, It is prepared in said user server and can attain by offering the storage which said computer which stored the program including the instruction which makes a computer perform updating which updates front print control software to said new print control software can read.

[0031] Invention of above-mentioned claims 12 and 13 is performed by building the above-mentioned software into a storage.

[0032]

[Embodiment of the Invention] Hereafter, the example of an operation gestalt of this invention is explained to a detail using a drawing.

<Example of 1st operation gestalt> drawing 1 is a printing structure-of-a-system Fig. explaining the example of the 1st operation gestalt.

[0033] In this drawing, two or more clients 2-1 - 2-n, a server 3, two or more printer equipments 4-1 - 4-n are connected to the network 1. Moreover, a client 2-1 - 2-n are personal computers, and output the print data created with the application program built in, respectively to a server 3 (it explains as a print server 3 hereafter). A print server 3 performs management of two or more printer equipments in the case of printing processing, and control. Moreover, a print server 3 memorizes the print data supplied from a client to auxiliary storage units, such as a magnetic disk, and performs printing control. Printer equipment 2-1 - 2-n are flexible airline printers, and printing processing is possible for them corresponding to the specification of the various clients 2-1 - 2-n.

[0034] In addition, each client 2-1 - 2-n have non-illustrated CPU, an application program, RAM, a print driver, etc., and have further the communication link and interface (I/F) in which printer equipment 4-1 - 4-n, and direct communication are possible through a network 1.

[0035] On the other hand, drawing 2 is drawing explaining the connection configuration of the above-mentioned print server 3, printer equipment 4-1 - 4-n. A print server 3 manages and controls the print data outputted from a client 2-1 - 2-n, and outputs print data to printer equipment 4-1 - 4-n. Printer equipment 4-1 - 4-n consist of a printer controller 5 and printer engine 6, and the print data outputted from a print server 3 are supplied to a printer controller 5.

[0036] The printer controller 5 consists of MPU7, nonvolatile memory 8, the system work-piece memory 9, the output-control section 10, the drawing control section 11, a display 12, a font memory 13, the operation panel 14, a specification configuration switch 15, the network control section 16, and a local port control section 17. In addition, a LAN board is connected to the above-mentioned network control section 16, and data are delivered and received between a print server 3, or each client 2-1 - 2-n. Moreover, it is a deed about transfer of data between the personal computers by which the connection of the Centronics board was carried out to the above-mentioned local port control section 17, for example, direct continuation was carried out to printer equipment 4-1 - 4-n through the local port control section 17.

[0037] In addition, in the usual printing processing of above-mentioned printer equipment 4-1 - 4-n, the image data which the print data inputted from the print server 3 were stored in the receive buffer in the system work-piece memory 9 through the network control section 16, and command analysis was carried out [image data] by analysis processing of MPU7, for example, was changed into pattern data by the font memory 13 is developed by the frame memory in the system work-piece memory 9. And if the image data for one sheet of form is developed by the frame memory, image data will be outputted to printer engine 6 through the output-control section 10, and image data will be printed by the form.

[0038] On the other hand, in this example, especially an update process of the print control software for performing above-mentioned printing processing is explained, and this print control software is memorized by the above-mentioned nonvolatile memory 8. In addition, this nonvolatile memory 8 consists of an EEPROM and a flash memory. In the above configuration, processing actuation is explained below.

[0039] Drawing 3 is a flow chart which carries out the opinion of the update process of print control software. The left-hand side shown in this drawing is processing of printer equipment 4-1 - 4-n, and right-hand side shows processing of a print server 3. First, printer equipment 4-1 - 4-n (on behalf of printer equipment, printer equipment 4-1 shows hereafter) perform the initial setting of a hard circuit by power-source ON (step 1 (S shows drawing 3 hereafter)). For example, clear processing of the data in the register of MPU7, the data which remain in the output-control section 10 are cleared.

[0040] Next, the initial setting of the system work-piece memory 9 is performed (S2). This processing is the work area of the system work-piece memory 9, and clear processing of data in which it remains in a receive buffer and a frame memory, and reads the print control software memorized by nonvolatile memory 8 to the work area of the system work-piece memory 9 after this clear processing (S3).

[0041] Next, the updating acknowledge request of new print control software is performed (S4). At this time, the data outputted from printer equipment 4-1 are the data B shown in drawing 4. As this data B is shown in this drawing, "the address of a network printer", "the updating acknowledge request (command) of print control software" and "the information on a demand printer", and a "termination code" are contained. For example, the address (for example, printer number) of the printer equipment which performs the updating acknowledge request of print control software is described by "the address of a network printer", and data, such as the command only for printer control, for example, "ESC**" etc., are described by "the updating acknowledge request (command) of print control software." Moreover, as "information on a demand printer", the model name of printer equipment (for example, printer equipment 4-1) and the data of the present version are described. Furthermore, the command only for printer control, for example, "ESCxx", is described by the "termination code."

[0042] If this data B is sent to a print server 3, by the print server 3 side, the usual server processing, for example, management of printer equipment 4-1 - 4-n etc., is processed until above-mentioned data are supplied, but (S5 is N (no) and S6) if the above-mentioned data B input (S5 is Y (yes)), the updating check of print control software will be performed (S7). For example, the updating check of this print control software is decision whether the print control software memorized by hard disk 3a of a print server 3 was updated.

[0043] Here, if print control software is not yet updated (S7 is nothing [updating]), Data C are transmitted to printer equipment 4-1 (S8). As shown in above-mentioned drawing 4, this data C consists of "the address of a network printer", "an updating-less response instruction of print control software", and a "termination code", and "the address of a network printer" and the "termination code" of it are the same as that of the above-mentioned example. In addition, as for "the updating-less response instruction of print control software", data, such as the command only for printer control, for example, "ESC++" etc., are described.

[0044] On the other hand, if it judges that print control software is updated in above-mentioned decision (S7) (S7 is *****), a print server 3 will create the data A which set new (updating) print control software and described (S9) and new print control software, and will output them to printer equipment 4-1 (S10). Here, Data A consist of "the address of a network printer", "an updating instruction (command) of print control software", "print (it is new) control software data", and a "termination code", as shown in drawing 4.

[0045] After outputting the above-mentioned data B, in the printer equipment 4-1 side, the response of an updating check Waiting (S11 is nothing), If the above-mentioned data C are supplied from a print server 3 (S11 is **) Printer equipment 4-1 analyzes the contents of Data C, and a setup of new print control software ends an update process of print control software as what is not according to "an updating-less response instruction of print control software" included in Data C. Data D are outputted to a print server 3 (S12).

[0046] On the other hand, if the response of an updating check is supplied to waiting (S11 is nothing) and the above-mentioned data A from a print server 3 after outputting the above-mentioned data B (S11 is **), printer equipment 4-1 will analyze the contents of Data A, and will update print control software according to "the updating instruction (command) of print control software" included in Data A. That is, after reading the "print (it is new) control software data"

contained in Data A (S13) and storing new print control software in the system work-piece memory 9, print control software is written in nonvolatile memory 8 (S14). Then, print control software updated by performing reset processing is performed (S15), an update process of print control software is ended, and Data D are outputted to a print server 3 (S12).

[0047] In addition, as shown in drawing 4, Data D consist of "the address of a network printer", "an update process termination instruction of print control software", "the address of a demand printer", and a "termination code", by the print server 3 side, if this data D is supplied, will end an update process (S16 is Y), and will return to the usual server processing (S6).

[0048] Moreover, a judgment of renewal of the above-mentioned print control software in a print server 3 is made as follows. Drawing 5 is the memory configuration of a print server 3 and hard disk 3a. Area 3b to which the above-mentioned data B are supplied, and updating version table 3c are prepared in the work-piece memory by the side of a print server 3, and whenever print control software is updated by updating version table 3c, the version of new print control software is written in. For example, a version "AAA1.00", a version "ABC1.02" ... Each version data of a version "XYZ1.11" are written in.

[0049] Moreover, the data of the print control software corresponding to an above-mentioned version are memorized by hard disk 3a. for example, to a version "AAA1.00", the print control software corresponding to storage area 3a-1 on hard disk 3a is memorized, and the print control software corresponding to storage area 3a-2 on hard disk 3a memorizes to a version "ABC1.02" - - having ... to the version "XYZ1.11", the print control software corresponding to storage area 3a-3 on hard disk 3a is memorized.

[0050] Therefore, in a print server 3, if Data B are supplied from printer equipment 4-1, version information will be read from "the information on a demand printer" included in Data B, and it will write in this area. And as compared with the version information of updating version table 3c in a print server 3, if the version number is in agreement, the renewal of print control software judges it as what is not, and if the version number is not in agreement on the other hand, it will judge it as that by which print control software was updated. For example, in the case of the example shown in drawing 5, it is contained in Data B, and since the version data of "ABC1.02" are written in updating version table 3c, the version written in area 3b is not in agreement, and it is "ABC1.01" and it needs renewal of new print control software. And the print control software of the version "ABC1.02" memorized by updating version table 3c in this case is read from hard disk 3a, and it outputs to printer equipment 4-1 as new print control software.

[0051] When processing shown in drawing 3 when the power source of printer equipment 4-1 is turned on by processing as mentioned above is performed and the print control software of printer equipment 4-1 is updated by new print control software, print control software is updated automatically and complicated actuation of a network administrator is not needed.

<The example of the 2nd operation gestalt>, next the example of the 2nd operation gestalt of this invention are explained.

[0052] Drawing 6 is a printing structure-of-a-system Fig. explaining the example of the 2nd operation gestalt. In this drawing, two or more clients 2-1 - 2-n, a print server 3, two or more printer equipments 4-1 - 4-n are connected to the network 1. This configuration is the same as above-mentioned drawing 1, and it is a personal computer, and a client 2-1 - 2-n output the print data created with the application program built in, respectively to a print server 3, and perform printing processing with flexible printer equipment.

[0053] In this example, it is the configuration that the server 20 (the manufacturer server 20 shows hereafter) of the manufacturer who is a manufacturer environment was connected to LAN19 which is an above-mentioned user environment. Here, connection of LAN19 and the manufacturer server 20 is made for example, through the Internet circuit, or it is carried out through the public line. Moreover, hard disk 20a is connected to the manufacturer server 20.

[0054] In addition, the configuration of printer equipment 4-1 - 4-n is the same as that of above-mentioned drawing 2, it consists of a printer controller 5 and printer engine 6, and MPU7, nonvolatile memory 8, the system work-piece memory 9, etc. are formed in the printer controller 5 like the above-mentioned.

[0055] In the above configuration, processing actuation of the example of the 2nd operation gestalt

is explained below. Drawing 7 is a flow chart which carries out the opinion of the update process of the print control software of this example. In this example, the left-hand side shown in this drawing is processing of a print server 3 (henceforth the user server 3), and right-hand side shows processing of the manufacturer server 20.

[0056] First, the user server 3 is usually processing (step 1 (ST shows drawing 7 hereafter)), and is performing management of two or more printer equipments 4-1 - 4-n, and control. Next, the updating timing of print control software is judged (ST2), and if it is not the updating timing of print control software (ST2 is N), and a check timing value will be counted up (ST3) and a check timing value will be reached, decision (ST2) will be set to Y. Therefore, check processing of print control software is performed to the timing according to an above-mentioned check timing value. Next, check processing of print control software outputs "the updating acknowledge request (command) of print control software" first (ST4). This updating acknowledge request is performed by outputting the data E shown in drawing 8 to the manufacturer server 20. Here, as the data configuration of Data E is shown in drawing 8, it is "the network address of a manufacturer server", "the updating acknowledge request of print control software", "the information on a demand printer", and a "termination code", and the information on user ID, Printer ID, the present version, and a model number (model No) is especially included in "the information on a demand printer."

[0057] In the manufacturer server 20 side, if it is usually processing (ST5 is N and ST6) and the above-mentioned data E input until it receives the acknowledge request of print control software (ST5 is Y), the updating check of print control software will be performed (ST7). For example, the updating check of this print control software judges whether the print control software memorized by hard disk 20a of the manufacturer server 20 was updated.

[0058] Here, drawing 9 shows the memory configuration of the manufacturer server 20 and hard disk 20a. Area 20b to which the above-mentioned data E are supplied, and updating version table 20c are prepared in the work-piece memory by the side of the manufacturer server 20, and whenever print control software is updated by updating version table 20c, the version of new print control software is written in. For example, each version data, such as a version "AAA2.05" and a version "ABC1.02", are written in.

[0059] Moreover, the data of the print control software corresponding to an above-mentioned version are memorized by hard disk 20a. For example, to a version "AAA2.05", the print control software corresponding to storage area 20a-1 on hard disk 20a is memorized, and the print control software corresponding to storage area 20a-2 on hard disk 20a is memorized to the version "ABC1.02."

[0060] In the manufacturer server 20, if the above-mentioned data E are supplied, the information on user ID, Printer ID, the present version, and a model number (model No) will be read from "the information on a demand printer" included in Data E, and it will write in area 20b. And coincidence of print control software is checked as compared with the version information registered into updating version table 20c (ST7).

[0061] Here, when print control software is not updated (S7 is nothing [updating]), Data G are transmitted to the user server 3 (S8). As shown in above-mentioned drawing 8, this data G consists of "the network address of a user server", "an updating-less response instruction of print control software", "information on a demand printer", and a "termination code", and can make a judgment without renewal of print control software in the user server 3 which received this data G.

[0062] On the other hand, if it judges that print control software is updated in above-mentioned decision (ST7) (ST7 is *****), the manufacturer server 20 will set new (updating) print control software (ST9), will create the data F which described new print control software, and will output them to the user server 3 (S10). Here, Data F consist of "the address of a network printer", "an updating instruction of print control software", "the information on a demand printer", an "updating version", "print (it is new) control software data", and a "termination code", as shown in drawing 8.

[0063] After outputting the above-mentioned data E, in the user server 3 side, the response of an updating check Waiting (S11 is nothing), For example, if the above-mentioned data G are supplied

from the manufacturer server 20 (S11 is **) The contents of Data G are analyzed, a setup of new print control software is judged to be what is not according to "an updating-less response instruction of print control software" included in Data G (ST12 is N), and an update process of print control software is ended. At this time, Data H are outputted to the manufacturer server 20 (ST13), and clear processing of the above-mentioned check timing value is carried out (ST14).

[0064] On the other hand, if the response of an updating check is supplied to waiting (ST11 is nothing) and Data F from the manufacturer server 20 after outputting the above-mentioned data E (S11 is **), the user server 3 will analyze the contents of Data F, and will update print control software according to "an updating instruction of print control software" included in Data F. That is, the "print (it is new) control software data" contained in Data F is read (ST15), and new print control software is stored in the memory in the user server 3 (ST16).

[0065] Drawing 10 consists of area 3a in which the print control software which is drawing explaining the memory configuration of the user server 3, and was newly supplied, and its version data are written, updating version table 3c, and hard disk 3a, the new print control software inputted into area 3b is registered into the storage area to which hard disk 3a corresponds, and version data are registered into above-mentioned updating version table 3c.

[0066] In addition, as shown in drawing 8, Data H consist of "the network address of a manufacturer server", "an update process termination instruction of print control software", "information on a demand printer", and a "termination code", by the manufacturer server 20 side, if this data H is supplied, will end an update process (ST17 is Y), and will return to the usual server processing (ST6).

[0067] If processing shown in drawing 7 whenever a timer carries out counting of the check timing value set up beforehand by processing as mentioned above is performed and it is updated by new print control software at the manufacturer server 20, print control software will be updated automatically.

<The example of the 3rd operation gestalt>, next the example of the 3rd operation gestalt of this invention are explained.

[0068] Drawing 11 is a printing structure-of-a-system Fig. explaining the example of the 3rd operation gestalt. In this drawing, two or more clients 2-1 - 2-n, a print server 3, two or more printer equipments 4-1 - 4-n are connected to the network 1. This configuration is the same as above-mentioned drawing 6, and it is a personal computer, and a client 2-1 - 2-n output the print data created with the application program built in, respectively to a print server 3, and perform printing processing with flexible printer equipment.

[0069] In this example, it is the configuration that the manufacturer server 20 which is a manufacturer environment was connected to LAN19 which is an above-mentioned user environment, and connection of LAN19 and the manufacturer server 20 is made for example, through the Internet circuit, or it is carried out through the public line. Moreover, hard disk 20a is connected to the manufacturer server 20.

[0070] Drawing 12 (a) and (b) are drawings explaining the memory configuration of the manufacturer server 20, this drawing (a) shows the configuration of the work-piece memory in the manufacturer server 20, and this drawing (b) shows the configuration of hard disk 20a. The work-piece memory in the manufacturer server 20 consists of area 20b which "the information on a demand printer" of the updating acknowledge request of the print control software outputted from the user server 3 inputs, and updating version table 20c into which updating version information was registered.

[0071] The information on the user ID contained in the above-mentioned "information on a demand printer", Printer ID, the present version, and a model number (model No) is stored in area 20b. for example, this drawing — the user ID of Y company, the present version name of the "printers ABC [ID and] 1.02" of a model y2, and model No of "500" It is written in.

[0072] Moreover, printer information, such as X company, is registered into updating version table 20c at first in Y above-mentioned company. For example, in the case of Y company, Printer ID and version data of models y1, y2, and y3, and a disk address are registered. Moreover, in the case of X company, a model x1, Printer ID and version data of x2, and a disk address are registered.

[0073] On the other hand, the data of the print control software corresponding to the area

specified by the above-mentioned disk address and the data which accompany [user ID] are memorized by hard disk 20a. For example, the number of user ID is Y and the print control software "AAA2.01" of the latest version of a model y1 is registered into the area of a disk address AD 1. Moreover, similarly the number of user ID is Y, and the print control software "ABC1.03" of the latest version of a model y2 is registered into the area of a disk address AD 2. [0074] In addition, it is as the contents of registration, such as print control software of the other companies, such as a model of others of Y company and X company, also being shown in this drawing. In the above configuration, processing actuation of the example of the 3rd operation gestalt is explained below.

[0075] Drawing 13 is a flow chart explaining processing actuation of this example. In this example, processing actuation of the manufacturer server 20 after the data E explained in the above-mentioned example of the 2nd operation gestalt were supplied from the user server 3 is explained.

[0076] That is, if Data E are outputted to the manufacturer server 20 in order to perform the updating check of print control software from the above-mentioned user server 3, the manufacturer server 20 will write "the information on a demand printer" in area 20b first (step 1 (shown by Following STP)). For example, if it is the information which shows the information written in area 20b at this time in this drawing (a), in the term of user ID, they are a model y2 and Model No to the term of Y company and Printer ID. Each data of "ABC1.02" is written in the term of "500" and the present version at a term.

[0077] After writing each data in area 20b as mentioned above, the manufacturer server 20 performs retrieval processing of user ID first (STP2). This retrieval processing is processing which judges whether the ID number of the user who had the updating acknowledge request in the data registered into updating version table 3c is registered. For example, in the case of an above-mentioned example, user ID is the ID number of Y company, it exists in updating version table 3c, and Y company of updating version table 3c is searched first.

[0078] Next, retrieval processing of Printer ID is performed (STP3). It judges whether the ID number of the printer by which this retrieval processing also had the updating acknowledge request in the data registered into updating version table 3c is registered. For example, in the case of an above-mentioned example, Printer ID is a model y2 and exists in updating version table 3c. Therefore, a model y2 is chosen in the printer equipment of Y company next.

[0079] Next, model No It judges (STP4). Model No special to selected printer equipment here If there is nothing (STP4 is nothing), the latest version of target printer equipment will be set (STP5). On the other hand, it is Model No like an above-mentioned example. It is Model No when set up (STP4 is **). It searches (STP6). For example, at an above-mentioned example, it is Model No. Model No which is "500" and corresponds from updating version table 3c The version data of print control software are read (STP7).

[0080] Next, the data of the latest version read as mentioned above are compared with the current version data currently written in area 20b (STP8). As a result of this comparison processing, if the data of the latest version and the data of the present version are in agreement, the update process of print control software will be unnecessary (STP8 is updating needlessness), and will make output preparations of Data G (STP9). (the response preparations without updating are made) And Data G are outputted to the user server 3 (STP10).

[0081] On the other hand, if the data of the latest version and the data of the present version are not in agreement as a result of comparison processing (STP8) (STP8 is an updating important point), it is judged as that by which the print control software of the type concerned of printer equipment was updated, and hard disk 20a is searched and corresponding print control software is read (STP11, STP12). And the preparations which transmit the read print control software to the user server 3 are made (STP13), for example, it outputs to the user server 3 as the above-mentioned data F (STP14).

[0082] As mentioned above, according to this example, by the user ID of printer equipment, Printer ID, the present version, and the model number (model No), an updating judgment of print control software can be made automatically, and retrieval of print control software and a setup can be performed still more conveniently.

<The example of the 4th operation gestalt>, next the example of the 4th operation gestalt of this

invention are explained.

[0083] Drawing 14 is a printing structure-of-a-system Fig. explaining the example of the 4th operation gestalt. As for this drawing, above-mentioned drawing 2 and a part of configurations overlap. That is, it is drawing explaining the connection configuration of a print server 3, printer equipment 4-1 - 4-n, and printer equipment is shown on behalf of printer equipment 4-1. Moreover, the configuration of printer equipment 4-1 is as above-mentioned, it consists of a printer controller 5 and printer engine 6, and the printer controller 5 consists of MPU7, nonvolatile memory 8, the system work-piece memory 9, the output-control section 10, the drawing control section 11, a display 12, a font memory 13, the operation panel 14, a specification configuration switch 15, the network control section 16, and a local port control section 17.

[0084] When the information shown in above-mentioned drawing 12 (a) and (b) is registered into the user server 3 and its hard disk 3a and there is an updating acknowledge request of print control data from printer equipment, this example performs the same processing as processing of the above-mentioned manufacturer server 20, and updates print control software. The data supplied to the user server 3 from printer equipment 4-1 in this case are the data J and M shown in drawing 15, and the data supplied to printer equipment 4-1 from the user server 3 are Data K and L. Data J have "the network address of a user server", "the updating acknowledge request of print control software", "the information on a demand printer", and a "termination code", and, specifically, give the updating demand of print control software to the user server 3. Like the above-mentioned, from the information on user ID, Printer ID, the present version, and a model number (model No), if the user server 3 has renewal of print control software, it will read new print control software and will register it into printer equipment 4-1.

[0085] Therefore, if an updating judgment of print control software can be made automatically and print control software is further updated also by constituting in this way, print control software can be updated automatically.

<The example of the 5th operation gestalt>, next the example of the 5th operation gestalt of this invention are explained.

[0086] Drawing 16 is a flow chart explaining the example of the 5th operation gestalt. As the above-mentioned example of an operation gestalt explained, when print control software is changed, this example prints the modification with the printer equipment concerned, and reports modification of print control software.

[0087] Hereafter, if it explains concretely, print data or print control software will be supplied from a print server 3, and the specified printer equipment will perform corresponding processing. First, printer equipment (for example, printer equipment 4-1 receives the print data or print control software supplied from the printer server 3 (step 1 (V shows drawing 25 hereafter))). Next, analysis processing of the received data is performed (V2).

[0088] Here, when the received data are the usual print data (V2 is print data), the usual printing processing is performed (V3). On the other hand, when the received data are print control software (V2 is an updating instruction), the print control software concerned is read and it stores in the system work-piece memory 9 (V4). In addition, corresponding processing is performed when the received data are other instructions (V2 is other instructions) (V5).

[0089] Here, when the received data are print control software (V2 is an updating instruction), reading processing of print control software is performed as mentioned above (V4), and print control data before being written in memory is updated (V6). Furthermore, the information on the version data of the updated print control software etc. is read, and it sets as print data (V7). Specifically, the image data of the model name of printer equipment, an updating version name, and updating termination is created as bit map data to the frame memory in the system work-piece memory 9.

[0090] Next, above-mentioned print data are outputted to printer engine 6 through the output-control section 10, and printing shown as I is performed to drawing 16 (V8). Then, the data of the updated print control software are registered into nonvolatile memory 8 (V9). In addition, the processing (V10) shown in this drawing by the dotted line is processing in the case of receiving print data or print control software from a local port, for example, is the case where the direct computer is connected to printer equipment. Also in this case, print data or print control software

is analyzed by analysis processing, when it is print control software, the print control software before being written in the memory in printer equipment is updated by new print control software, and printing processing which shows the fact of updating is performed (V4, V6-V9).

[0091] Even when print control software is automatically updated by processing as mentioned above, a user can know renewal of print control software by [which printed the fact of updating in the form] outputting.

<The example of the 6th operation gestalt>, next the example of the 6th operation gestalt of this invention are explained.

[0092] Drawing 17 is a flow chart explaining the example of the 6th operation gestalt. This example reports modification of print control software also to the display of the computer of a client while it prints the modification with the printer equipment concerned and reports modification of print control software, when print control software is changed as the above-mentioned example of an operation gestalt explained. Hereafter, it explains concretely.

[0093] A client is the computer connected to the network 1 as mentioned above, for example, is a personal computer which has a plug-and-play function. First, it judges whether the connection with printer equipment completed the client (for example, client 2-1) through the network 1 (step 1 (U shows drawing 17 hereafter)). Next, it judges whether the driver is installed (U2). Here, application will be started if the driver is installed (it judges whether as for the version of Y and print control software, U2 is the same (U4), and since rewriting is unnecessary if the version is the same, the usual printing processing is performed with the application concerned (U5)). If the driver is not installed (U2 is N), install of a driver is required and a required driver is installed from a floppy disk (U6 is Y and U7).

[0094] Next, it judges whether the version of the installed print control software is in agreement with the version of printer equipment 4-1 (U8). When this decision is the same as the above-mentioned decision (U4) and a version is not in agreement, rewriting of print control software is needed (U9 is Y and U4 is Y). In this case, as the above-mentioned example of an operation gestalt explained, Data B or Data E is outputted, the updating acknowledge request of print control software is performed to a print server 3, and the print control software new occasionally whose updating is the need is downloaded (U10).

[0095] On the other hand, with printer equipment 4-1, it judges whether there is any rewriting processing of a program (print control software) (U10), and when there is nothing, the usual printing processing is performed (U11). On the other hand, when rewriting processing of a program (print control software) is required, new print control software is registered into the above-mentioned nonvolatile memory 8 (U12). And a rewriting flag is registered into the system work-piece memory 9 (U13), and printer equipment 4-1 is reset (U14). It judges whether control of printer equipment 4-1 is changed to new print control software by this reset processing, and the above-mentioned flag turns it on by it (U15), the flag which the system work-piece memory 9 registered when it was ON is reset, and self-printing is performed (U15, U16).

[0096] This self-printing reads the information on the version data of the updated print control software etc. as well as the above-mentioned example of the 5th operation gestalt, creates the image data of the model name of printer equipment, an updating version name, and updating termination, outputs above-mentioned print data to printer engine 6 through the output-control section 10, and prints in a form. In addition, above-mentioned self-printing termination is memorized (U18).

[0097] Next, by a plug-and-play function etc., the information on printer equipment 4-1 is created to a client, and it notifies to a client (U19-U21). On the other hand, the client which received this notice displays on a display that rewriting of print control software was performed (U22, U23). This display displays the same **** as above-mentioned printing processing.

[0098] Therefore, when the print control software of printer equipment is rewritten by constituting in this way according to this example, it can report certainly the update information of print control software is not only printed by the form, but that the same update information also as the display of the client which directed printing was displayed, and print control software was updated to a user.

<The example of the 7th operation gestalt>, next the example of the 7th operation gestalt of this

invention are explained.

[0099] Drawing 18 is a floppy disk explaining the example of the 7th operation gestalt. This example drives printer equipment, without mistaking a version by also memorizing the download file of print control software (firmware), and memorizing the driver file and print control software (firmware) corresponding to the storage of one sheet while memorizing the driver file of a printer to storages, such as a floppy disk.

[0100] Hereafter, it explains concretely using the flow chart shown in drawing 19 and drawing 20. First, the flow chart shown in drawing 19 is a flow chart explaining install of the printer driver to a client.

[0101] First, a printer driver is installed (step 1 (Q shows drawing 19 hereafter)). next — the case where judge the connection condition of printer equipment (for example, printer equipment 4-1), and printer equipment 4-1 is not connected — processing — ending (Q2 being NG) — if printer equipment 4-1 is connected (Q2 OKs), the version data of print control software will be read (Q3).

[0102] Next, the version of print control software judges in the right (Q4). It judges whether the handling of the print control software which the driver concerned read by giving the version table of print control software to a drive program is possible for this decision. Here, install processing will be ended if the print control software of printer equipment 4-1 corresponds to the driver concerned (Q4 OKs). On the other hand, if it is the print control software which cannot be dealt with by the driver concerned (Q4 is NG), transmission of the operating-condition set point of printer equipment is required of printer equipment 4-1, and the operating-condition set point outputted from printer equipment 4-1 is uploaded and stored temporarily (Q5).

[0103] Next, new print control software is transmitted to printer equipment 4-1 (Q(it downloads) 6). Furthermore, the operating-condition set point of the printer equipment stored temporarily is changed into new print control software, and it transmits to printer equipment 4-1 (Q7).

[0104] In case a new driver is installed in a client as mentioned above, the printing impossible by a driver and print control software not corresponding etc. can be avoided by checking the print control software of corresponding printer equipment, and updating print control software to the print control software corresponding to a new driver, when print control software does not correspond to the newly installed driver.

[0105] It is the processing which, on the other hand, checks the version of print control software in case printing processing is started in order to be unable to say to be it that there is nothing that the flow chart shown in drawing 20 installs only a driver in a setup of the driver to a client when printer equipment is not connected by chance but to avoid the trouble in the case of printing processing such even case.

[0106] Before the processing shown in this drawing is fundamentally the same as the processing and decision enclosed with the dotted-line frame shown in drawing 19, outputting print data to printer equipment from a client and performing printing processing, the version data of print control software are first read from printer equipment (step 1 (N shows drawing 20 hereafter)).

[0107] Next, the version of print control software judges in the right (N2). The version table of print control software is contained in the drive program, and this decision as well as the above-mentioned is performed by judging whether the handling of the print control software which the driver concerned read is possible. Here, install processing will be ended if the print control software of printer equipment 4-1 corresponds to the driver concerned (N2 OKs). On the other hand, if it is the print control software which cannot be dealt with by the driver concerned (N2 is NG), transmission of the operating-condition set point of printer equipment is required of printer equipment, and the operating-condition set point outputted from printer equipment is uploaded and stored temporarily (N3).

[0108] Next, new print control software is transmitted to printer equipment (N4). Furthermore, the operating-condition set point of the printer equipment stored temporarily is changed into new print control software, and it transmits to printer equipment (N5). Printing processing is performed after performing the above processing (N6).

[0109] As mentioned above, when it checks whether the print control software of printer equipment surely supports the driver of a client side in the case of printing processing and print control software does not correspond, printing impossible etc. can be certainly avoided by updating

print control software to the print control software corresponding to a new driver.

<The example of the 8th operation gestalt>, next the example of the 8th operation gestalt of this invention are explained.

[0110] Drawing 21 is the system configuration Fig. of the printing system which used the computer network explaining the example of the 8th operation gestalt. Like the above-mentioned example of an operation gestalt, although this example is the printing system which used the computer network, the configurations with which Network Server 24 is connected to the service centers 23, such as printer equipment, for example through the Internet differ. Network Server 24 receives the printer driver of the latest edition, and supply of print control software from a service center 23, and always stocks the printer driver and print control software of the latest version. And Network Server 24 updates the print driver of the computer of each client periodically, and updates the print control software of printer equipment periodically. Hereafter, it explains concretely.

[0111] There is a field which stores the printer driver of each printers 25A, 25B, and 25C of A mold, B mold, and C mold and the software (firmware shows hereafter) firmware for printer control in hard disk HD24a of Network Server 24, and Network Server 24 is connected to the source of information dispatch of a printer manufacturer's service center 23 through the Internet circuit. Therefore, the printer driver and firmware which are stored in Network Server 24 are rewritten by the software of the latest version transmitted from service center 23 grade. Network Server 24 performs rewriting processing to the thing of whether the version of the firmware stored in the controller of Printers 25A-25C (flash memory for control program storing) at the time of printing processing of each printer is in agreement with what Network Server 24 stores, and the newest when it identified and differs.

[0112] Moreover, if the versions of the printer driver which each clients 2a-2d store, respectively also differ [having been similarly comparison-discernment-stored in Network Server 24, and], rewriting processing will be performed with the thing in Network Server 24.

[0113] As for the printer driver and firmware in the system of this invention, the thing of the latest version will always be maintained by this. The anonymous FTP [to which each printer manufacturer opens the program of a printer driver or a firmware widely on the Internet] server for which the anonymous FTP server was installed, for example, and each printer manufacturer etc. prepared Network Server 24 of the system of this invention through the Internet (public line etc.) is accessed, and by FTP (file transfer protocol), program data can be transmitted and can be incorporated in hard disk 24a. The Network Server of this invention performs such processing periodically, and always holds the newest information in hard disk 24a.

[0114] Thus, by constituting, it is updated automatically a fixed period, and with the printer equipments 25A-25C, print control software is updated automatically a fixed period, and a print driver can always perform printing processing with the print driver and print control software of the latest version at a client 2-1 - 2-n.

[0115] In the above-mentioned example of the 1st operation gestalt and the above-mentioned example of the 2nd operation gestalt a print server 3 In addition, for example, the updating demand function to give the updating demand of print control software to hard disk 3a, The transmitting function which judges the existence of renewal of said print control software, and transmits new print control software to said updating demand when said print control software needs to be updated, A program including the instruction which performs the updating function which updates front print control software to said new print control software may be stored and constituted.

[0116] This is the same also about hard disk 20a of the manufacturer server 20.

[0117]

[Effect of the Invention] Since an update process of print control software will be ensured in a power up etc. according to this invention if it has changed to new print control software as explained above, the print control software of the latest version can always perform printing processing.

[0118] Moreover, since print control software is updated with a fixed time interval by a timer etc. between a print server and a manufacturer server, the print control software of the latest version can always be prepared for a print server.

[0119] Moreover, since the printout of the fact is carried out when new print control software is

incorporated, a user can know renewal of print control software easily. Furthermore, since the fact is displayed on the display of a client when not only a printed output but new print control software is incorporated, renewal of print control software can be known certainly.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to a printing system including the airline printer connected to the computer network.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] In recent years, joint use of the printer equipment with which computer networks, such as LAN (Local Area Network), are widely used, and are used for a network is carried out to two or more clients. In such a network, the program which delivers and receives data between a network and printer equipment is also included in the control software used for printer equipment. And the maintenance of the control software uses the rewriting control software registered into the print server, and is performing rewriting processing of control software by the function of a printer the basis of management of a network administrator, and own.

[0003] Drawing 22 is a flow chart explaining rewriting processing of the control program of conventional printer equipment. As shown in this drawing, a print server outputs print data or printing control data, and printer equipment performs reception of the print data from a printer server, or printing control data (step 1 (W shows drawing 25 hereafter)). Next, analysis processing of the received data is performed (W2).

[0004] Here, when the received data are the usual print data (W2 is print data), the usual printing processing is performed (W3). On the other hand, when the received data are print control data (W2 is an updating instruction), reading processing of print control data is performed (W4). In addition, when the received data are other instructions (W2 is other instructions), corresponding instruction processing is performed (W5).

[0005] Here, when the received data are print control data (W2 is an updating instruction), reading processing of print control data is performed as mentioned above (W4), and print control data before being written in memory is updated (W6).

[0006] In addition, the processing shown in this drawing by the dotted line is a flow in the case of receiving print data or print control data from a local port, for example, is an example in case the direct computer is connected to printer equipment. Also in this case, print data or print control data is analyzed by analysis processing, and when it is print control data, print control data before being written in the memory in printer equipment is updated by new print control data (W4, W6).

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EFFECT OF THE INVENTION

[Effect of the Invention] Since an update process of print control software will be ensured in a power up etc. according to this invention if it has changed to new print control software as explained above, the print control software of the latest version can always perform printing processing.

[0118] Moreover, since print control software is updated with a fixed time interval by a timer etc. between a print server and a manufacturer server, the print control software of the latest version can always be prepared for a print server.

[0119] Moreover, since the printout of the fact is carried out when new print control software is incorporated, a user can know renewal of print control software easily. Furthermore, since the fact is displayed on the display of a client when not only a printed output but new print control software is incorporated, renewal of print control software can be known certainly.

[Translation done.]

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] The following problems occur in the above conventional printing systems.

(b) First, in the conventional system, when print control data was updated, the network administrator of the printing system concerned managed and judged the use condition of target printer equipment, and was performing rewriting processing of print control data if needed. For this reason, in the conventional printing system, the print control data was able to be updated only to the printer equipment of the range which a network administrator can manage.

[0008] (b) On the other hand, although the renewal of print control data may be based on a request of a user, it is based on a request from a manufacturer side in many cases. For example, renewal of print control data is needed for all users in many cases for the functional enhancement of printer equipment, the cure against a bug, etc. However, in the conventional printing system, the print control data is individually updated to the printer equipment which serves as a candidate for updating such even case.

[0009] The technical problem of this invention offers the printing system which updates print control data automatically based on a user's hope when required, and can be performed by putting in block an update process of the print control data from a manufacturer in view of the above-mentioned conventional actual condition.

[Translation done.]

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MEANS

[Means for Solving the Problem] In the printing system in the computer network with which printer equipment was connected with the print server at least in order that invention according to claim 1 might solve the above-mentioned technical problem An updating demand output means for it to be prepared in said printer equipment and to perform the updating demand of print control software, A transmitting means for it to be prepared in said print server and to judge the existence of renewal of said print control software to said updating demand, and to transmit new print control software when said print control software needs to be updated, It is prepared in said printer equipment and can attain by offering the printing system which has an updating means to update front print control software to said new print control software.

[0011] For example, printer equipment is predetermined timing and performs the updating demand of print control software. This predetermined timing may be the current supply to printer equipment, or even by setup of the fixed timing by the timer, is good and outputs the updating demand of print control software according to such predetermined timing. And according to this output, by the print server side, renewal of print control software is judged, new print control software is transmitted to printer equipment, and new print control software is updated by the printer equipment side.

[0012] Thus, since an update process of print control software is ensured when the updating check of the print control software of printer equipment is surely performed in a power up etc. with printer equipment and it has changed to new print control software by constituting, the print control software of the latest version can always perform printing processing.

[0013] The publication of claim 2 is the configuration of having a storage means by which said print server memorizes said new print control software, in said invention according to claim 1. That is, from those, such as a communication line and a floppy disk, by the print server, supply is received and always new print control software is stored in the storage means.

[0014] Thus, by constituting, it can respond immediately to the updating acknowledge request of printer equipment. It is the configuration that the publication of claim 3 makes a judgment of the existence of the print control software by said print server by the model of printer in said invention according to claim 1.

[0015] Here, user ID and Printer ID are contained in the model of printer, and a model number (model No) is also contained. And according to such information, a print server supplies the print control software of printer equipment with an updating demand to corresponding printer equipment. In the printing system in the computer network which has a user server and printer equipment and was connected to a manufacturer's server in order that invention according to claim 4 might solve the above-mentioned technical problem An updating demand means for it to be prepared in said user server and to give the updating demand of print control software to said manufacturer server, A transmitting means for it to be prepared in said manufacturer server and to judge the existence of renewal of said print control software to said updating demand, and to transmit new print control software when said print control software needs to be updated, It is prepared in said user server and can attain by offering the printing system which has an updating means to update front print control software to said new print control software.

[0016] This invention is processing of as opposed to the updating demand of the print control

software between a print server and a manufacturer server to invention of said claim 1 having been processing to the updating demand of printer equipment and the print control software between print servers.

[0017] For example, a print server is predetermined timing and performs the updating demand of print control software. This predetermined timing is set up by a timer etc. and outputs the updating demand of print control software according to such predetermined timing. In a manufacturer server side, renewal of print control software is judged, new print control software is transmitted to a print server, and new print control software is updated by the print server.

[0018] Thus, since an update process of print control software is ensured in a print server when the updating check of the print control software of a print server is surely performed to a print server according to deadline of a timer and it has changed to new print control software by constituting, the print control software of the latest version can always be prepared for a print server.

[0019] The publication of claim 5 is the configuration of having a storage means by which said manufacturer server memorizes said new print control software, in said invention according to claim 4. This example corresponds to the publication of above-mentioned claim 2, from those, such as a communication line and a floppy disk, by the manufacturer server, receives supply of always new print control software, and stores it in the storage means. Thus, by constituting, it can respond immediately to the updating acknowledge request of a print server.

[0020] It is the configuration that the publication of claim 6 makes a judgment of the existence of the print control software by said manufacturer server by the model of printer in said invention according to claim 4.

[0021] This example corresponds to the publication of above-mentioned claim 3, and user ID and Printer ID are contained in the model of printer, and a model number (model No) is also contained. And according to such information, a manufacturer server supplies the print control software of printer equipment with an updating demand to a corresponding print server. In said invention according to claim 1, the publication of claim 7 is the configuration that printing processing which shows that the update process was performed by corresponding printer equipment is performed, when renewal of said print control software is performed.

[0022] Thus, by constituting, when new print control software is built into printer equipment, the printout of the fact is carried out, and a user can know renewal of print control software easily.

[0023] In said invention according to claim 1, the publication of claim 8 is the configuration that printing processing which shows that the update process was performed to the display of the corresponding computer of a client is performed, when renewal of said print control software is performed.

[0024] This example displays the fact on the corresponding display of a client, when the still newer print control software to printer equipment is incorporated, and it tells renewal of print control software certainly.

[0025] It is the configuration that the renewal of said print control software performs the publication of claim 9 in said invention according to claim 1 or 4 using a storage. Here, as a storage, there are storages, such as a floppy disk, a hard disk, and a compact disk, and print control software is built into these storages, and it is used for renewal of print control software.

[0026] The publication of claim 10 is the configuration that the printer driver which corresponds to said storage with said print control software is also memorized, in the publication of said claim 9.

[0027] Thus, by constituting, a printer driver and corresponding print control software can be updated using one storage, and install of a printer driver and print control software can be performed correctly.

[0028] The publication of claim 11 is the configuration that said print control software is supplied from the service center of said printer equipment, in said claim 1 or invention of 4. Here, a manufacturer, the total dealer, etc. of the above-mentioned printer equipment may correspond, and a service center may be constituted so that it not only supplies print control software, but a direct print server and printer equipment may be supplied through a Network Server from a service center.

[0029] The updating demand function to perform the updating demand of print control software in

order that invention of claim 12 may solve the above-mentioned technical problem, The transmitting function which judges the existence of renewal of said print control software, and transmits new print control software to said updating demand when said print control software needs to be updated, It can attain by offering the storage which said computer which stored the program including the instruction which makes a computer perform the updating function which updates front print control software to said new print control software can read.

[0030] Moreover, the updating demand function to give the updating demand of print control software to said manufacturer server in order that invention of claim 13 may solve the above-mentioned technical problem, The transmitting function which judges the existence of renewal of said print control software, and transmits new print control software to said updating demand when said print control software needs to be updated, It is prepared in said user server and can attain by offering the storage which said computer which stored the program including the instruction which makes a computer perform updating which updates front print control software to said new print control software can read.

[0031] Invention of above-mentioned claims 12 and 13 is performed by building the above-mentioned software into a storage.

[0032]

[Embodiment of the Invention] Hereafter, the example of an operation gestalt of this invention is explained to a detail using a drawing.

<Example of 1st operation gestalt> drawing 1 is a printing structure-of-a-system Fig. explaining the example of the 1st operation gestalt.

[0033] In this drawing, two or more clients 2-1 - 2-n, a server 3, two or more printer equipments 4-1 - 4-n are connected to the network 1. Moreover, a client 2-1 - 2-n are personal computers, and output the print data created with the application program built in, respectively to a server 3 (it explains as a print server 3 hereafter). A print server 3 performs management of two or more printer equipments in the case of printing processing, and control. Moreover, a print server 3 memorizes the print data supplied from a client to auxiliary storage units, such as a magnetic disk, and performs printing control. Printer equipment 2-1 - 2-n are flexible airline printers, and printing processing is possible for them corresponding to the specification of the various clients 2-1 - 2-n.

[0034] In addition, each client 2-1 - 2-n have non-illustrated CPU, an application program, RAM, a print driver, etc., and have further the communication link and interface (I/F) in which printer equipment 4-1 - 4-n, and direct communication are possible through a network 1.

[0035] On the other hand, drawing 2 is drawing explaining the connection configuration of the above-mentioned print server 3, printer equipment 4-1 - 4-n. A print server 3 manages and controls the print data outputted from a client 2-1 - 2-n, and outputs print data to printer equipment 4-1 - 4-n. Printer equipment 4-1 - 4-n consist of a printer controller 5 and printer engine 6, and the print data outputted from a print server 3 are supplied to a printer controller 5.

[0036] The printer controller 5 consists of MPU7, nonvolatile memory 8, the system work-piece memory 9, the output-control section 10, the drawing control section 11, a display 12, a font memory 13, the operation panel 14, a specification configuration switch 15, the network control section 16, and a local port control section 17. In addition, a LAN board is connected to the above-mentioned network control section 16, and data are delivered and received between a print server 3, or each client 2-1 - 2-n. Moreover, it is a deed about transfer of data between the personal computers by which the connection of the Centronics board was carried out to the above-mentioned local port control section 17, for example, direct continuation was carried out to printer equipment 4-1 - 4-n through the local port control section 17.

[0037] In addition, in the usual printing processing of above-mentioned printer equipment 4-1 - 4-n, the image data which the print data inputted from the print server 3 were stored in the receive buffer in the system work-piece memory 9 through the network control section 16, and command analysis was carried out [image data] by analysis processing of MPU7, for example, was changed into pattern data by the font memory 13 is developed by the frame memory in the system work-piece memory 9. And if the image data for one sheet of form is developed by the frame memory, image data will be outputted to printer engine 6 through the output-control section 10, and image data will be printed by the form.

[0038] On the other hand, in this example, especially an update process of the print control software for performing above-mentioned printing processing is explained, and this print control software is memorized by the above-mentioned nonvolatile memory 8. In addition, this nonvolatile memory 8 consists of an EEPROM and a flash memory. In the above configuration, processing actuation is explained below.

[0039] Drawing 3 is a flow chart which carries out the opinion of the update process of print control software. The left-hand side shown in this drawing is processing of printer equipment 4-1 - 4-n, and right-hand side shows processing of a print server 3. First, printer equipment 4-1 - 4-n (on behalf of printer equipment, printer equipment 4-1 shows hereafter) perform the initial setting of a hard circuit by power-source ON (step 1 (S shows drawing 3 hereafter)). For example, clear processing of the data in the register of MPU7, the data which remain in the output-control section 10 are cleared.

[0040] Next, the initial setting of the system work-piece memory 9 is performed (S2). This processing is the work area of the system work-piece memory 9, and clear processing of data in which it remains in a receive buffer and a frame memory, and reads the print control software memorized by nonvolatile memory 8 to the work area of the system work-piece memory 9 after this clear processing (S3).

[0041] Next, the updating acknowledge request of new print control software is performed (S4). At this time, the data outputted from printer equipment 4-1 are the data B shown in drawing 4. As this data B is shown in this drawing, "the address of a network printer", "the updating acknowledge request (command) of print control software" and "the information on a demand printer", and a "termination code" are contained. For example, the address (for example, printer number) of the printer equipment which performs the updating acknowledge request of print control software is described by "the address of a network printer", and data, such as the command only for printer control, for example, "ESC**" etc., are described by "the updating acknowledge request (command) of print control software." Moreover, as "information on a demand printer", the model name of printer equipment (for example, printer equipment 4-1) and the data of the present version are described. Furthermore, the command only for printer control, for example, "ESCxx", is described by the "termination code."

[0042] If this data B is sent to a print server 3, by the print server 3 side, the usual server processing, for example, management of printer equipment 4-1 - 4-n etc., is processed until above-mentioned data are supplied, but (S5 is N (no) and S6) if the above-mentioned data B input (S5 is Y (yes)), the updating check of print control software will be performed (S7). For example, the updating check of this print control software is decision whether the print control software memorized by hard disk 3a of a print server 3 was updated.

[0043] Here, if print control software is not yet updated (S7 is nothing [updating]), Data C are transmitted to printer equipment 4-1 (S8). As shown in above-mentioned drawing 4, this data C consists of "the address of a network printer", "an updating-less response instruction of print control software", and a "termination code", and "the address of a network printer" and the "termination code" of it are the same as that of the above-mentioned example. In addition, as for "the updating-less response instruction of print control software", data, such as the command only for printer control, for example, "ESC++" etc., are described.

[0044] On the other hand, if it judges that print control software is updated in above-mentioned decision (S7) (S7 is *****), a print server 3 will create the data A which set new (updating) print control software and described (S9) and new print control software, and will output them to printer equipment 4-1 (S10). Here, Data A consist of "the address of a network printer", "an updating instruction (command) of print control software", "print (it is new) control software data", and a "termination code", as shown in drawing 4.

[0045] After outputting the above-mentioned data B, in the printer equipment 4-1 side, the response of an updating check Waiting (S11 is nothing), If the above-mentioned data C are supplied from a print server 3 (S11 is **) Printer equipment 4-1 analyzes the contents of Data C, and a setup of new print control software ends an update process of print control software as what is not according to "an updating-less response instruction of print control software" included in Data C. Data D are outputted to a print server 3 (S12).

[0046] On the other hand, if the response of an updating check is supplied to waiting (S11 is nothing) and the above-mentioned data A from a print server 3 after outputting the above-mentioned data B (S11 is **), printer equipment 4-1 will analyze the contents of Data A, and will update print control software according to "the updating instruction (command) of print control software" included in Data A. That is, after reading the "print (it is new) control software data" contained in Data A (S13) and storing new print control software in the system work-piece memory 9, print control software is written in nonvolatile memory 8 (S14). Then, print control software updated by performing reset processing is performed (S15), an update process of print control software is ended, and Data D are outputted to a print server 3 (S12).

[0047] In addition, as shown in drawing 4, Data D consist of "the address of a network printer", "an update process termination instruction of print control software", "the address of a demand printer", and a "termination code", by the print server 3 side, if this data D is supplied, will end an update process (S16 is Y), and will return to the usual server processing (S6).

[0048] Moreover, a judgment of renewal of the above-mentioned print control software in a print server 3 is made as follows. Drawing 5 is the memory configuration of a print server 3 and hard disk 3a. Area 3b to which the above-mentioned data B are supplied, and updating version table 3c are prepared in the work-piece memory by the side of a print server 3, and whenever print control software is updated by updating version table 3c, the version of new print control software is written in. For example, a version "AAA1.00", a version "ABC1.02" ... Each version data of a version "XYZ1.11" are written in.

[0049] Moreover, the data of the print control software corresponding to an above-mentioned version are memorized by hard disk 3a. for example, to a version "AAA1.00", the print control software corresponding to storage area 3a-1 on hard disk 3a is memorized, and the print control software corresponding to storage area 3a-2 on hard disk 3a memorizes to a version "ABC1.02" - having ... to the version "XYZ1.11", the print control software corresponding to storage area 3a-3 on hard disk 3a is memorized.

[0050] Therefore, in a print server 3, if Data B are supplied from printer equipment 4-1, version information will be read from "the information on a demand printer" included in Data B, and it will write in this area. And as compared with the version information of updating version table 3c in a print server 3, if the version number is in agreement, the renewal of print control software judges it as what is not, and if the version number is not in agreement on the other hand, it will judge it as that by which print control software was updated. For example, in the case of the example shown in drawing 5, it is contained in Data B, and since the version data of "ABC1.02" are written in updating version table 3c, the version written in area 3b is not in agreement, and it is "ABC1.01" and it needs renewal of new print control software. And the print control software of the version "ABC1.02" memorized by updating version table 3c in this case is read from hard disk 3a, and it outputs to printer equipment 4-1 as new print control software.

[0051] When processing shown in drawing 3 when the power source of printer equipment 4-1 is turned on by processing as mentioned above is performed and the print control software of printer equipment 4-1 is updated by new print control software, print control software is updated automatically and complicated actuation of a network administrator is not needed.

<The example of the 2nd operation gestalt>, next the example of the 2nd operation gestalt of this invention are explained.

[0052] Drawing 6 is a printing structure-of-a-system Fig. explaining the example of the 2nd operation gestalt. In this drawing, two or more clients 2-1 - 2-n, a print server 3, two or more printer equipments 4-1 - 4-n are connected to the network 1. This configuration is the same as above-mentioned drawing 1, and it is a personal computer, and a client 2-1 - 2-n output the print data created with the application program built in, respectively to a print server 3, and perform printing processing with flexible printer equipment.

[0053] In this example, it is the configuration that the server 20 (the manufacturer server 20 shows hereafter) of the manufacturer who is a manufacturer environment was connected to LAN19 which is an above-mentioned user environment. Here, connection of LAN19 and the manufacturer server 20 is made for example, through the Internet circuit, or it is carried out through the public line. Moreover, hard disk 20a is connected to the manufacturer server 20.

[0054] In addition, the configuration of printer equipment 4-1 - 4-n is the same as that of above-mentioned drawing 2, it consists of a printer controller 5 and printer engine 6, and MPU7, nonvolatile memory 8, the system work-piece memory 9, etc. are formed in the printer controller 5 like the above-mentioned.

[0055] In the above configuration, processing actuation of the example of the 2nd operation gestalt is explained below. Drawing 7 is a flow chart which carries out the opinion of the update process of the print control software of this example. In this example, the left-hand side shown in this drawing is processing of a print server 3 (henceforth the user server 3), and right-hand side shows processing of the manufacturer server 20.

[0056] First, the user server 3 is usually processing (step 1 (ST shows drawing 7 hereafter)), and is performing management of two or more printer equipments 4-1 - 4-n, and control. Next, the updating timing of print control software is judged (ST2), and if it is not the updating timing of print control software (ST2 is N), and a check timing value will be counted up (ST3) and a check timing value will be reached, decision (ST2) will be set to Y. Therefore, check processing of print control software is performed to the timing according to an above-mentioned check timing value. Next, check processing of print control software outputs "the updating acknowledge request (command) of print control software" first (ST4). This updating acknowledge request is performed by outputting the data E shown in drawing 8 to the manufacturer server 20. Here, as the data configuration of Data E is shown in drawing 8, it is "the network address of a manufacturer server", "the updating acknowledge request of print control software", "the information on a demand printer", and a "termination code", and the information on user ID, Printer ID, the present version, and a model number (model No) is especially included in "the information on a demand printer."

[0057] In the manufacturer server 20 side, if it is usually processing (ST5 is N and ST6) and the above-mentioned data E input until it receives the acknowledge request of print control software (ST5 is Y), the updating check of print control software will be performed (ST7). For example, the updating check of this print control software judges whether the print control software memorized by hard disk 20a of the manufacturer server-20 was updated.

[0058] Here, drawing 9 shows the memory configuration of the manufacturer server 20 and hard disk 20a. Area 20b to which the above-mentioned data E are supplied, and updating version table 20c are prepared in the work-piece memory by the side of the manufacturer server 20, and whenever print control software is updated by updating version table 20c, the version of new print control software is written in. For example, each version data, such as a version "AAA2.05" and a version "ABC1.02", are written in.

[0059] Moreover, the data of the print control software corresponding to an above-mentioned version are memorized by hard disk 20a. For example, to a version "AAA2.05", the print control software corresponding to storage area 20a-1 on hard disk 20a is memorized, and the print control software corresponding to storage area 20a-2 on hard disk 20a is memorized to the version "ABC1.02."

[0060] In the manufacturer server 20, if the above-mentioned data E are supplied, the information on user ID, Printer ID, the present version, and a model number (model No) will be read from "the information on a demand printer" included in Data E, and it will write in area 20b. And coincidence of print control software is checked as compared with the version information registered into updating version table 20c (ST7).

[0061] Here, when print control software is not updated (S7 is nothing [updating]), Data G are transmitted to the user server 3 (S8). As shown in above-mentioned drawing 8, this data G consists of "the network address of a user server", "an updating-less response instruction of print control software", "information on a demand printer", and a "termination code", and can make a judgment without renewal of print control software in the user server 3 which received this data G.

[0062] On the other hand, if it judges that print control software is updated in above-mentioned decision (ST7) (ST7 is *****), the manufacturer server 20 will set new (updating) print control software (ST9), will create the data F which described new print control software, and will output them to the user server 3 (S10). Here, Data F consist of "the address of a network printer", "an

updating instruction of print control software", "the information on a demand printer", an "updating version", "print (it is new) control software data", and a "termination code", as shown in drawing 8.

[0063] After outputting the above-mentioned data E, in the user server 3 side, the response of an updating check Waiting (S11 is nothing), For example, if the above-mentioned data G are supplied from the manufacturer server 20 (S11 is **) The contents of Data G are analyzed, a setup of new print control software is judged to be what is not according to "an updating-less response instruction of print control software" included in Data G (ST12 is N), and an update process of print control software is ended. At this time, Data H are outputted to the manufacturer server 20 (ST13), and clear processing of the above-mentioned check timing value is carried out (ST14).

[0064] On the other hand, if the response of an updating check is supplied to waiting (ST11 is nothing) and Data F from the manufacturer server 20 after outputting the above-mentioned data E (S11 is **), the user server 3 will analyze the contents of Data F, and will update print control software according to "an updating instruction of print control software" included in Data F. That is, the "print (it is new) control software data" contained in Data F is read (ST15), and new print control software is stored in the memory in the user server 3 (ST16).

[0065] Drawing 10 consists of area 3a in which the print control software which is drawing explaining the memory configuration of the user server 3, and was newly supplied, and its version data are written, updating version table 3c, and hard disk 3a, the new print control software inputted into area 3b is registered into the storage area to which hard disk 3a corresponds, and version data are registered into above-mentioned updating version table 3c.

[0066] In addition, as shown in drawing 8, Data H consist of "the network address of a manufacturer server", "an update process termination instruction of print control software", "information on a demand printer", and a "termination code", by the manufacturer server 20 side, if this data H is supplied, will end an update process (ST17 is Y), and will return to the usual server processing (ST6).

[0067] If processing shown in drawing 7 whenever a timer carries out counting of the check timing value set up beforehand by processing as mentioned above is performed and it is updated by new print control software at the manufacturer server 20, print control software will be updated automatically.

<The example of the 3rd operation gestalt>, next the example of the 3rd operation gestalt of this invention are explained.

[0068] Drawing 11 is a printing structure-of-a-system Fig. explaining the example of the 3rd operation gestalt. In this drawing, two or more clients 2-1 - 2-n, a print server 3, two or more printer equipments 4-1 - 4-n are connected to the network 1. This configuration is the same as above-mentioned drawing 6, and it is a personal computer, and a client 2-1 - 2-n output the print data created with the application program built in, respectively to a print server 3, and perform printing processing with flexible printer equipment.

[0069] In this example, it is the configuration that the manufacturer server 20 which is a manufacturer environment was connected to LAN19 which is an above-mentioned user environment, and connection of LAN19 and the manufacturer server 20 is made for example, through the Internet circuit, or it is carried out through the public line. Moreover, hard disk 20a is connected to the manufacturer server 20.

[0070] Drawing 12 (a) and (b) are drawings explaining the memory configuration of the manufacturer server 20, this drawing (a) shows the configuration of the work-piece memory in the manufacturer server 20, and this drawing (b) shows the configuration of hard disk 20a. The work-piece memory in the manufacturer server 20 consists of area 20b which "the information on a demand printer" of the updating acknowledge request of the print control software outputted from the user server 3 inputs, and updating version table 20c into which updating version information was registered.

[0071] The information on the user ID contained in the above-mentioned "information on a demand printer", Printer ID, the present version, and a model number (model No) is stored in area 20b. for example, this drawing -- the user ID of Y company, the present version name of the "printers ABC [ID and] 1.02" of a model y2, and model No of "500" It is written in.

[0072] Moreover, printer information, such as X company, is registered into updating version table 20c at first in Y above-mentioned company. For example, in the case of Y company, Printer ID and version data of models y1, y2, and y3, and a disk address are registered. Moreover, in the case of X company, a model x1, Printer ID and version data of x2, and a disk address are registered.

[0073] On the other hand, the data of the print control software corresponding to the area specified by the above-mentioned disk address and the data which accompany [user ID] are memorized by hard disk 20a. For example, the number of user ID is Y and the print control software "AAA2.01" of the latest version of a model y1 is registered into the area of a disk address AD 1. Moreover, similarly the number of user ID is Y, and the print control software "ABC1.03" of the latest version of a model y2 is registered into the area of a disk address AD 2.

[0074] In addition, it is as the contents of registration, such as print control software of the other companies, such as a model of others of Y company and X company, also being shown in this drawing. In the above configuration, processing actuation of the example of the 3rd operation gestalt is explained below.

[0075] Drawing 13 is a flow chart explaining processing actuation of this example. In this example, processing actuation of the manufacturer server 20 after the data E explained in the above-mentioned example of the 2nd operation gestalt were supplied from the user server 3 is explained.

[0076] That is, if Data E are outputted to the manufacturer server 20 in order to perform the updating check of print control software from the above-mentioned user server 3, the manufacturer server 20 will write "the information on a demand printer" in area 20b first (step 1 (shown by Following STP)). For example, if it is the information which shows the information written in area 20b at this time in this drawing (a), in the term of user ID, they are a model y2 and Model No to the term of Y company and Printer ID. Each data of "ABC1.02" is written in the term of "500" and the present version at a term.

[0077] After writing each data in area 20b as mentioned above, the manufacturer server 20 performs retrieval processing of user ID first (STP2). This retrieval processing is processing which judges whether the ID number of the user who had the updating acknowledge request in the data registered into updating version table 3c is registered. For example, in the case of an above-mentioned example, user ID is the ID number of Y company, it exists in updating version table 3c, and Y company of updating version table 3c is searched first.

[0078] Next, retrieval processing of Printer ID is performed (STP3). It judges whether the ID number of the printer by which this retrieval processing also had the updating acknowledge request in the data registered into updating version table 3c is registered. For example, in the case of an above-mentioned example, Printer ID is a model y2 and exists in updating version table 3c. Therefore, a model y2 is chosen in the printer equipment of Y company next.

[0079] Next, model No It judges (STP4). Model No special to selected printer equipment here If there is nothing (STP4 is nothing), the latest version of target printer equipment will be set (STP5). On the other hand, it is Model No like an above-mentioned example. It is Model No when set up (STP4 is **). It searches (STP6). For example, at an above-mentioned example, it is Model No. Model No which is "500" and corresponds from updating version table 3c The version data of print control software are read (STP7).

[0080] Next, the data of the latest version read as mentioned above are compared with the current version data currently written in area 20b (STP8). As a result of this comparison processing, if the data of the latest version and the data of the present version are in agreement, the update process of print control software will be unnecessary (STP8 is updating needlessness), and will make output preparations of Data G (STP9). (the response preparations without updating are made) And Data G are outputted to the user server 3 (STP10).

[0081] On the other hand, if the data of the latest version and the data of the present version are not in agreement as a result of comparison processing (STP8) (STP8 is an updating important point), it is judged as that by which the print control software of the type concerned of printer equipment was updated, and hard disk 20a is searched and corresponding print control software is read (STP11, STP12). And the preparations which transmit the read print control software to the user server 3 are made (STP13), for example, it outputs to the user server 3 as the above-mentioned data F (STP14).

[0082] As mentioned above, according to this example, by the user ID of printer equipment, Printer ID, the present version, and the model number (model No), an updating judgment of print control software can be made automatically, and retrieval of print control software and a setup can be performed still more conveniently.

<The example of the 4th operation gestalt>, next the example of the 4th operation gestalt of this invention are explained.

[0083] Drawing 14 is a printing structure-of-a-system Fig. explaining the example of the 4th operation gestalt. As for this drawing, above-mentioned drawing 2 and a part of configurations overlap. That is, it is drawing explaining the connection configuration of a print server 3, printer equipment 4-1 - 4-n, and printer equipment is shown on behalf of printer equipment 4-1.

Moreover, the configuration of printer equipment 4-1 is as above-mentioned, it consists of a printer controller 5 and printer engine 6, and the printer controller 5 consists of MPU7, nonvolatile memory 8, the system work-piece memory 9, the output-control section 10, the drawing control section 11, a display 12, a font memory 13, the operation panel 14, a specification configuration switch 15, the network control section 16, and a local port control section 17.

[0084] When the information shown in above-mentioned drawing 12 (a) and (b) is registered into the user server 3 and its hard disk 3a and there is an updating acknowledge request of print control data from printer equipment, this example performs the same processing as processing of the above-mentioned manufacturer server 20, and updates print control software. The data supplied to the user server 3 from printer equipment 4-1 in this case are the data J and M shown in drawing 15, and the data supplied to printer equipment 4-1 from the user server 3 are Data K and L. Data J have "the network address of a user server", "the updating acknowledge request of print control software", "the information on a demand printer", and a "termination code", and, specifically, give the updating demand of print control software to the user server 3. Like the above-mentioned, from the information on user ID, Printer ID, the present version, and a model number (model No), if the user server 3 has renewal of print control software, it will read new print control software and will register it into printer equipment 4-1.

[0085] Therefore, if an updating judgment of print control software can be made automatically and print control software is further updated also by constituting in this way, print control software can be updated automatically.

<The example of the 5th operation gestalt>, next the example of the 5th operation gestalt of this invention are explained.

[0086] Drawing 16 is a flow chart explaining the example of the 5th operation gestalt. As the above-mentioned example of an operation gestalt explained, when print control software is changed, this example prints the modification with the printer equipment concerned, and reports modification of print control software.

[0087] Hereafter, if it explains concretely, print data or print control software will be supplied from a print server 3, and the specified printer equipment will perform corresponding processing. First, printer equipment (for example, printer equipment 4-1 receives the print data or print control software supplied from the printer server 3 (step 1 (V shows drawing 25 hereafter)).) Next, analysis processing of the received data is performed (V2).

[0088] Here, when the received data are the usual print data (V2 is print data), the usual printing processing is performed (V3). On the other hand, when the received data are print control software (V2 is an updating instruction), the print control software concerned is read and it stores in the system work-piece memory 9 (V4). In addition, corresponding processing is performed when the received data are other instructions (V2 is other instructions) (V5).

[0089] Here, when the received data are print control software (V2 is an updating instruction), reading processing of print control software is performed as mentioned above (V4), and print control data before being written in memory is updated (V6). Furthermore, the information on the version data of the updated print control software etc. is read, and it sets as print data (V7). Specifically, the image data of the model name of printer equipment, an updating version name, and updating termination is created as bit map data to the frame memory in the system work-piece memory 9.

[0090] Next, above-mentioned print data are outputted to printer engine 6 through the output-

control section 10, and printing shown as I is performed to drawing 16 (V8). Then, the data of the updated print control software are registered into nonvolatile memory 8 (V9). In addition, the processing (V10) shown in this drawing by the dotted line is processing in the case of receiving print data or print control software from a local port, for example, is the case where the direct computer is connected to printer equipment. Also in this case, print data or print control software is analyzed by analysis processing, when it is print control software, the print control software before being written in the memory in printer equipment is updated by new print control software, and printing processing which shows the fact of updating is performed (V4, V6-V9).

[0091] Even when print control software is automatically updated by processing as mentioned above, a user can know renewal of print control software by [which printed the fact of updating in the form] outputting.

<The example of the 6th operation gestalt>, next the example of the 6th operation gestalt of this invention are explained.

[0092] Drawing 17 is a flow chart explaining the example of the 6th operation gestalt. This example reports modification of print control software also to the display of the computer of a client while it prints the modification with the printer equipment concerned and reports modification of print control software, when print control software is changed as the above-mentioned example of an operation gestalt explained. Hereafter, it explains concretely.

[0093] A client is the computer connected to the network 1 as mentioned above, for example, is a personal computer which has a plug-and-play function. First, it judges whether the connection with printer equipment completed the client (for example, client 2-1) through the network 1 (step 1 (U shows drawing 17 hereafter)). Next, it judges whether the driver is installed (U2). Here, application will be started if the driver is installed (it judges whether as for the version of Y and print control software, U2 is the same (U4), and since rewriting is unnecessary if the version is the same, the usual printing processing is performed with the application concerned (U5)). If the driver is not installed (U2 is N), install of a driver is required and a required driver is installed from a floppy disk (U6 is Y and U7).

[0094] Next, it judges whether the version of the installed print control software is in agreement with the version of printer equipment 4-1 (U8). When this decision is the same as the above-mentioned decision (U4) and a version is not in agreement, rewriting of print control software is needed (U9 is Y and U4 is Y). In this case, as the above-mentioned example of an operation gestalt explained, Data B or Data E is outputted, the updating acknowledge request of print control software is performed to a print server 3, and the print control software new occasionally whose updating is the need is downloaded (U10).

[0095] On the other hand, with printer equipment 4-1, it judges whether there is any rewriting processing of a program (print control software) (U10), and when there is nothing, the usual printing processing is performed (U11). On the other hand, when rewriting processing of a program (print control software) is required, new print control software is registered into the above-mentioned nonvolatile memory 8 (U12). And a rewriting flag is registered into the system work-piece memory 9 (U13), and printer equipment 4-1 is reset (U14). It judges whether control of printer equipment 4-1 is changed to new print control software by this reset processing, and the above-mentioned flag turns it on by it (U15), the flag which the system work-piece memory 9 registered when it was ON is reset, and self-printing is performed (U15, U16).

[0096] This self-printing reads the information on the version data of the updated print control software etc. as well as the above-mentioned example of the 5th operation gestalt, creates the image data of the model name of printer equipment, an updating version name, and updating termination, outputs above-mentioned print data to printer engine 6 through the output-control section 10, and prints in a form. In addition, above-mentioned self-printing termination is memorized (U18).

[0097] Next, by a plug-and-play function etc., the information on printer equipment 4-1 is created to a client, and it notifies to a client (U19-U21). On the other hand, the client which received this notice displays on a display that rewriting of print control software was performed (U22, U23). This display displays the same **** as above-mentioned printing processing.

[0098] Therefore, when the print control software of printer equipment is rewritten by constituting

in this way according to this example, it can report certainly the update information of print control software is not only printed by the form, but that the same update information also as the display of the client which directed printing was displayed, and print control software was updated to a user.

<The example of the 7th operation gestalt>, next the example of the 7th operation gestalt of this invention are explained.

[0099] Drawing 18 is a floppy disk explaining the example of the 7th operation gestalt. This example drives printer equipment, without mistaking a version by also memorizing the download file of print control software (firmware), and memorizing the driver file and print control software (firmware) corresponding to the storage of one sheet while memorizing the driver file of a printer to storages, such as a floppy disk.

[0100] Hereafter, it explains concretely using the flow chart shown in drawing 19 and drawing 20. First, the flow chart shown in drawing 19 is a flow chart explaining install of the printer driver to a client.

[0101] First, a printer driver is installed (step 1 (Q shows drawing 19 hereafter)). next — the case where judge the connection condition of printer equipment (for example, printer equipment 4-1), and printer equipment 4-1 is not connected — processing — ending (Q2 being NG) — if printer equipment 4-1 is connected (Q2 OKs), the version data of print control software will be read (Q3).

[0102] Next, the version of print control software judges in the right (Q4). It judges whether the handling of the print control software which the driver concerned read by giving the version table of print control software to a drive program is possible for this decision. Here, install processing will be ended if the print control software of printer equipment 4-1 corresponds to the driver concerned (Q4 OKs). On the other hand, if it is the print control software which cannot be dealt with by the driver concerned (Q4 is NG), transmission of the operating-condition set point of printer equipment is required of printer equipment 4-1, and the operating-condition set point outputted from printer equipment 4-1 is uploaded and stored temporarily (Q5).

[0103] Next, new print control software is transmitted to printer equipment 4-1 (Q(it downloads) 6). Furthermore, the operating-condition set point of the printer equipment stored temporarily is changed into new print control software, and it transmits to printer equipment 4-1 (Q7).

[0104] In case a new driver is installed in a client as mentioned above, the printing impossible by a driver and print control software not corresponding etc. can be avoided by checking the print control software of corresponding printer equipment, and updating print control software to the print control software corresponding to a new driver, when print control software does not correspond to the newly installed driver.

[0105] It is the processing which, on the other hand, checks the version of print control software in case printing processing is started in order to be unable to say to be it that there is nothing that the flow chart shown in drawing 20 installs only a driver in a setup of the driver to a client when printer equipment is not connected by chance but to avoid the trouble in the case of printing processing such even case.

[0106] Before the processing shown in this drawing is fundamentally the same as the processing and decision enclosed with the dotted-line frame shown in drawing 19, outputting print data to printer equipment from a client and performing printing processing, the version data of print control software are first read from printer equipment (step 1 (N shows drawing 20 hereafter)).

[0107] Next, the version of print control software judges in the right (N2). The version table of print control software is contained in the drive program, and this decision as well as the above-mentioned is performed by judging whether the handling of the print control software which the driver concerned read is possible. Here, install processing will be ended if the print control software of printer equipment 4-1 corresponds to the driver concerned (N2 OKs). On the other hand, if it is the print control software which cannot be dealt with by the driver concerned (N2 is NG), transmission of the operating-condition set point of printer equipment is required of printer equipment, and the operating-condition set point outputted from printer equipment is uploaded and stored temporarily (N3).

[0108] Next, new print control software is transmitted to printer equipment (N4). Furthermore, the operating-condition set point of the printer equipment stored temporarily is changed into new print

control software, and it transmits to printer equipment (N5). Printing processing is performed after performing the above processing (N6).

[0109] As mentioned above, when it checks whether the print control software of printer equipment surely supports the driver of a client side in the case of printing processing and print control software does not correspond, printing impossible etc. can be certainly avoided by updating print control software to the print control software corresponding to a new driver.

<The example of the 8th operation gestalt>, next the example of the 8th operation gestalt of this invention are explained.

[0110] Drawing 21 is the system configuration Fig. of the printing system which used the computer network explaining the example of the 8th operation gestalt. Like the above-mentioned example of an operation gestalt, although this example is the printing system which used the computer network, the configurations with which Network Server 24 is connected to the service centers 23, such as printer equipment, for example through the Internet differ. Network Server 24 receives the printer driver of the latest edition, and supply of print control software from a service center 23, and always stocks the printer driver and print control software of the latest version. And Network Server 24 updates the print driver of the computer of each client periodically, and updates the print control software of printer equipment periodically. Hereafter, it explains concretely.

[0111] There is a field which stores the printer driver of each printers 25A, 25B, and 25C of A mold, B mold, and C mold and the software (firmware shows hereafter) firmware for printer control in hard disk HD24a of Network Server 24, and Network Server 24 is connected to the source of information dispatch of a printer manufacturer's service center 23 through the Internet circuit. Therefore, the printer driver and firmware which are stored in Network Server 24 are rewritten by the software of the latest version transmitted from service center 23 grade. Network Server 24 performs rewriting processing to the thing of whether the version of the firmware stored in the controller of Printers 25A-25C (flash memory for control program storing) at the time of printing processing of each printer is in agreement with what Network Server 24 stores, and the newest when it identified and differs.

[0112] Moreover, if the versions of the printer driver which each clients 2a-2d store, respectively also differ [having been similarly comparison-discernment-stored in Network Server 24, and], rewriting processing will be performed with the thing in Network Server 24.

[0113] As for the printer driver and firmware in the system of this invention, the thing of the latest version will always be maintained by this. The anonymous FTP [to which each printer manufacturer opens the program of a printer driver or a firmware widely on the Internet] server for which the anonymous FTP server was installed, for example, and each printer manufacturer etc. prepared Network Server 24 of the system of this invention through the Internet (public line etc.) is accessed, and by FTP (file transfer protocol), program data can be transmitted and can be incorporated in hard disk 24a. The Network Server of this invention performs such processing periodically, and always holds the newest information in hard disk 24a.

[0114] Thus, by constituting, it is updated automatically a fixed period, and with the printer equipments 25A-25C, print control software is updated automatically a fixed period, and a print driver can always perform printing processing with the print driver and print control software of the latest version at a client 2-1 - 2-n.

[0115] In the above-mentioned example of the 1st operation gestalt and the above-mentioned example of the 2nd operation gestalt a print server 3 In addition, for example, the updating demand function to give the updating demand of print control software to hard disk 3a, The transmitting function which judges the existence of renewal of said print control software, and transmits new print control software to said updating demand when said print control software needs to be updated, A program including the instruction which performs the updating function which updates front.print control software to said new print control software may be stored and constituted.

[0116] This is the same also about hard disk 20a of the manufacturer server 20.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is a printing structure-of-a-system Fig. explaining the example of the 1st operation gestalt.

[Drawing 2] It is drawing explaining the connection configuration of a print server and printer equipment.

[Drawing 3] It is the flow chart which carries out the opinion of the update process of print control software.

[Drawing 4] It is drawing explaining the data configuration of various control data.

[Drawing 5] It is drawing explaining the memory configuration of a user server and a hard disk.

[Drawing 6] It is a printing structure-of-a-system Fig. explaining the example of the 2nd operation gestalt.

[Drawing 7] It is the flow chart which carries out the opinion of the update process of the print control software of the example of the 2nd operation gestalt.

[Drawing 8] It is drawing explaining the data configuration of the various control data of the example of the 2nd operation gestalt.

[Drawing 9] It is drawing explaining the memory configuration of a manufacturer server.

[Drawing 10] It is drawing explaining the memory configuration of a user server.

[Drawing 11] It is a printing structure-of-a-system Fig. explaining the example of the 3rd operation gestalt.

[Drawing 12] (a) is the block diagram of the work-piece memory of a manufacturer server, and (b) is drawing explaining the data configuration of updating print control software data.

[Drawing 13] It is the flow chart which carries out the opinion of the update process of print control software.

[Drawing 14] It is a printing structure-of-a-system Fig. explaining the example of the 4th operation gestalt.

[Drawing 15] It is drawing explaining the data configuration of the various control data used in the example of the 4th operation gestalt.

[Drawing 16] It is the flow chart which carries out the opinion of the update process explaining the example of the 5th operation gestalt of print control software.

[Drawing 17] It is the flow chart which carries out the opinion of the printing processing of the example of the 6th operation gestalt.

[Drawing 18] It is the configuration of the floppy disk explaining the example of the 7th operation gestalt.

[Drawing 19] It is a flow chart explaining the example of the 7th operation gestalt.

[Drawing 20] It is a flow chart explaining the example of the 7th operation gestalt.

[Drawing 21] It is a printing structure-of-a-system Fig. explaining the example of the 8th operation gestalt.

[Drawing 22] It is a flow chart explaining an update process of the print control software of the conventional example.

[Description of Notations]

1 Network

2-1 - 2-n Client
3 Print Server
3b Area
3c Updating version table
4-1 - 4-n Printer equipment
5 Printer Controller
6 Printer Engine
7 MPU
8 Nonvolatile Memory
9 System Work-Piece Memory
10 Output-Control Section
11 Drawing Control Section
12 Display
13 Font Memory
14 Operation Panel
15 Specification Configuration Switch
16 Network Control Section
17 Local Port Control Section
20 Manufacturer Server
20a Hard disk
20b Area
20c Updating version table
23 Service Center
24 Network Server
25A-25C Printer equipment

[Translation done.]

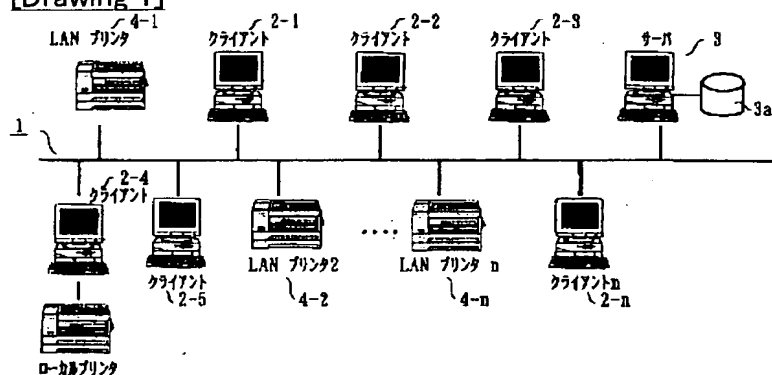
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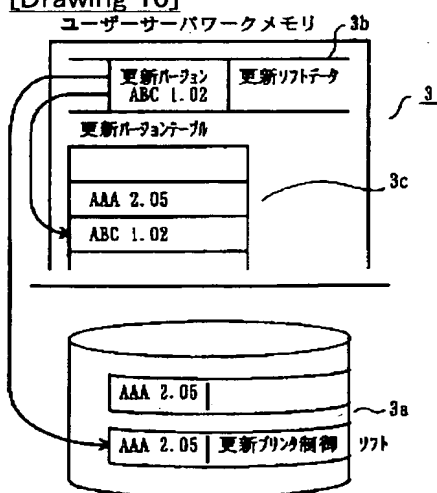
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DRAWINGS

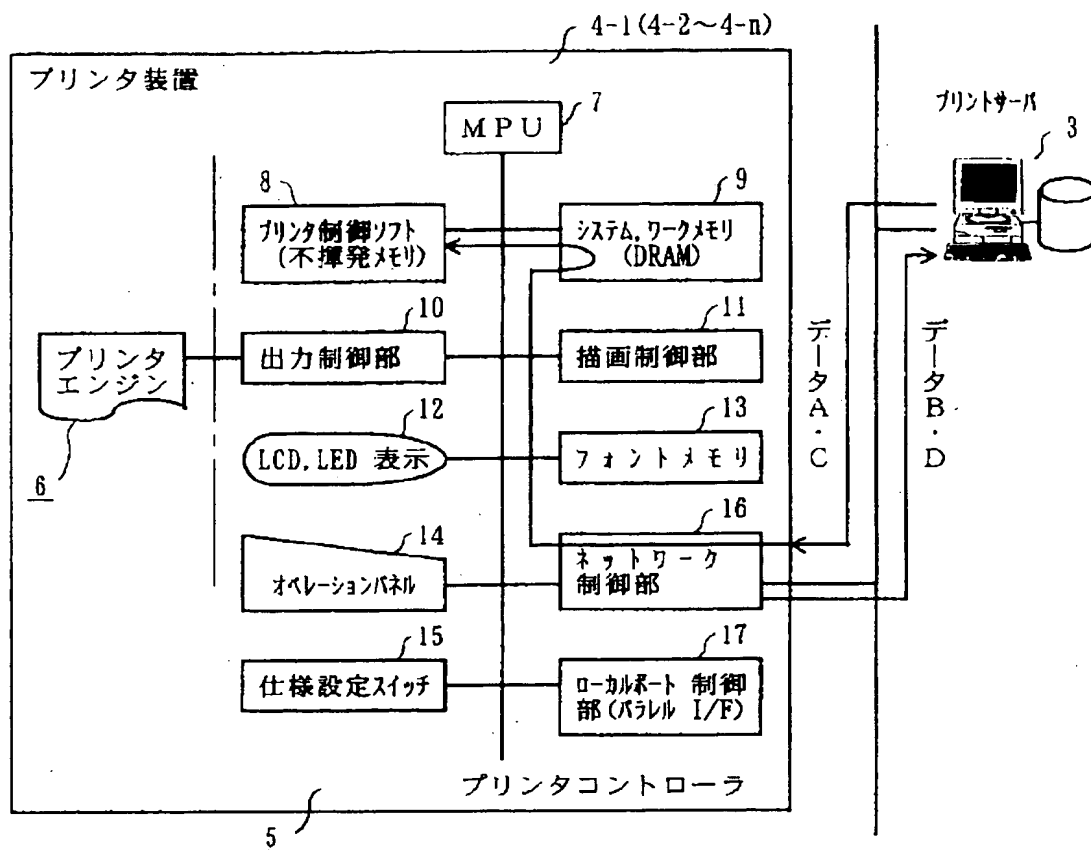
[Drawing 1]



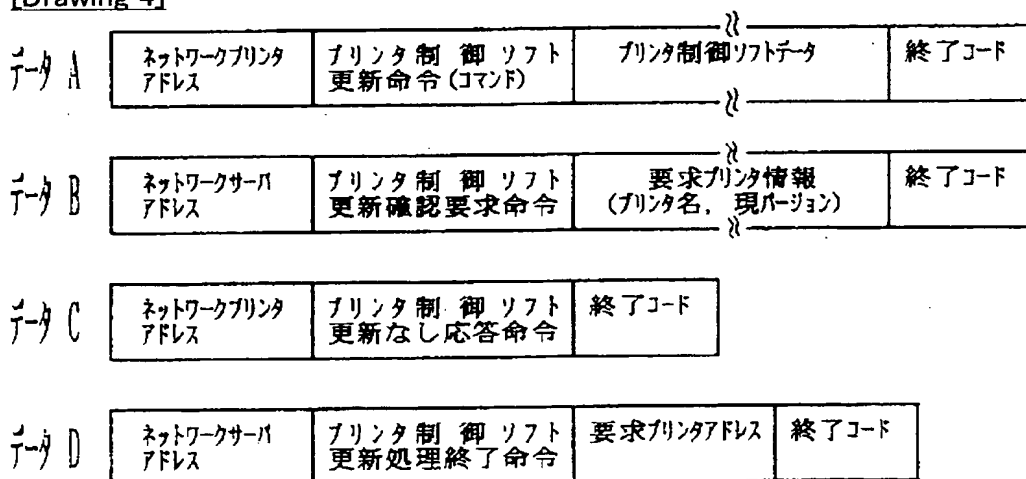
[Drawing 10]



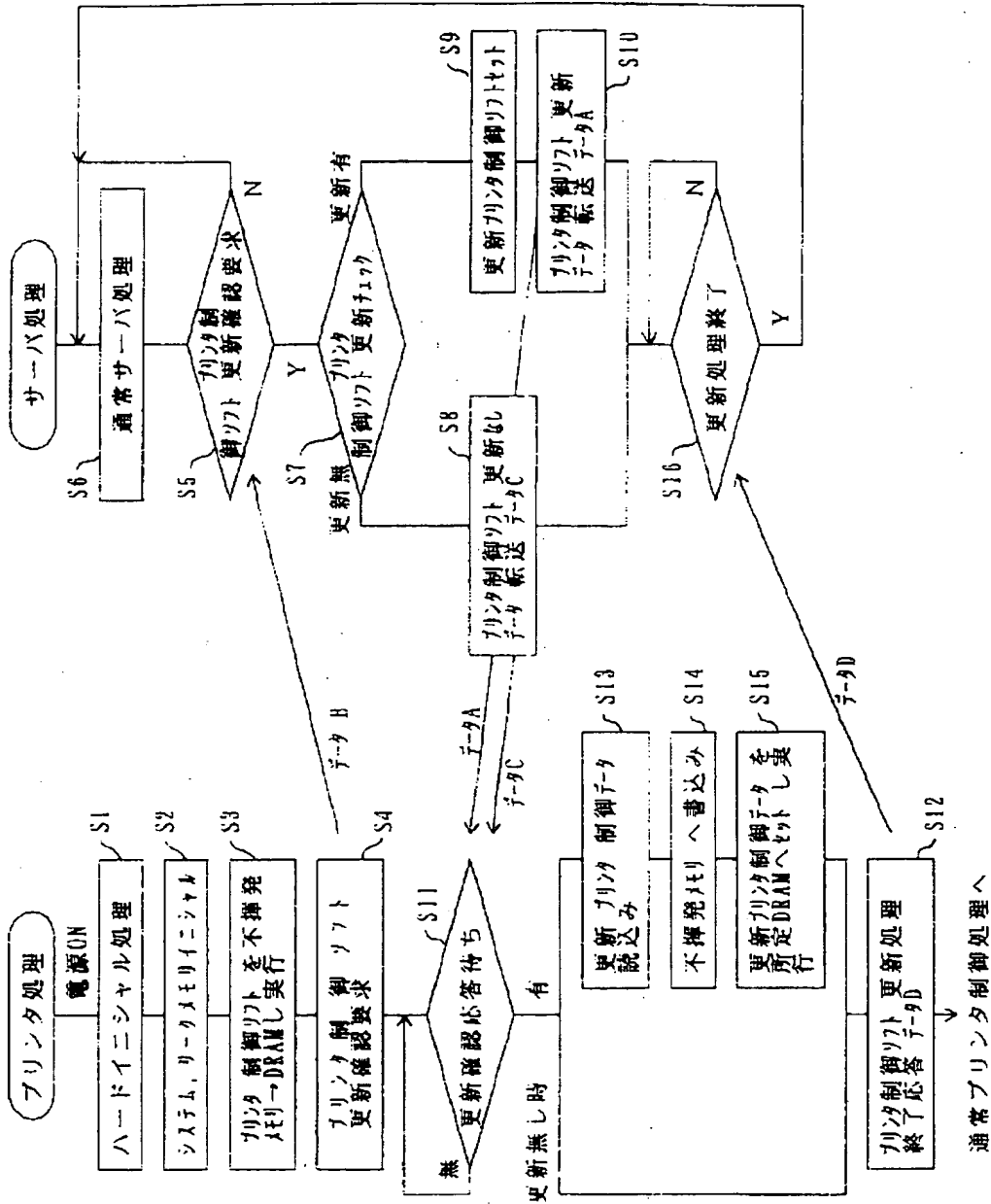
[Drawing 2]



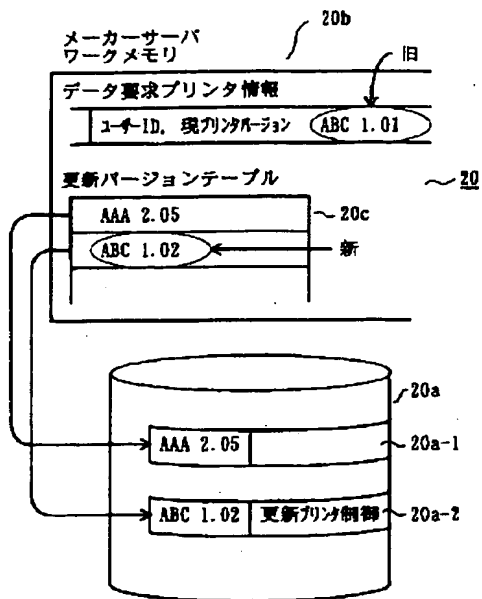
[Drawing 4]



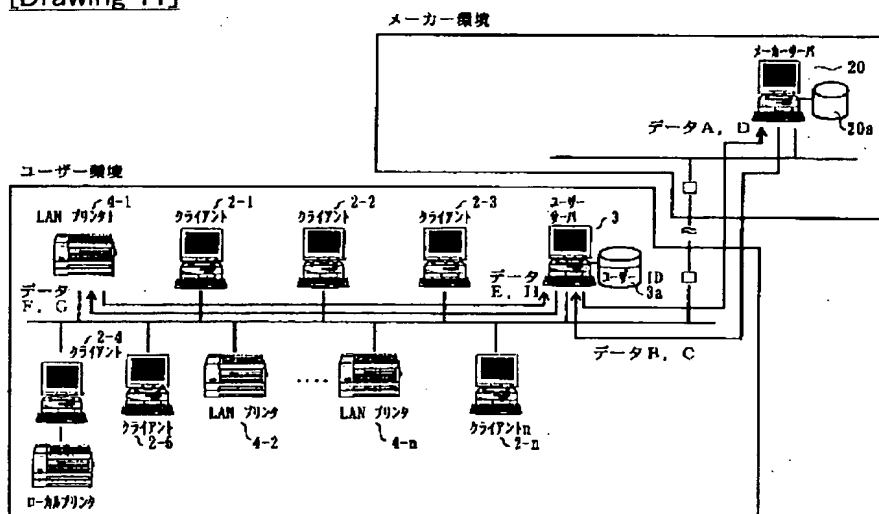
[Drawing 3]



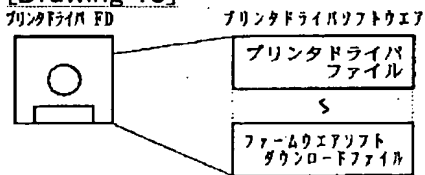
[Drawing 5]



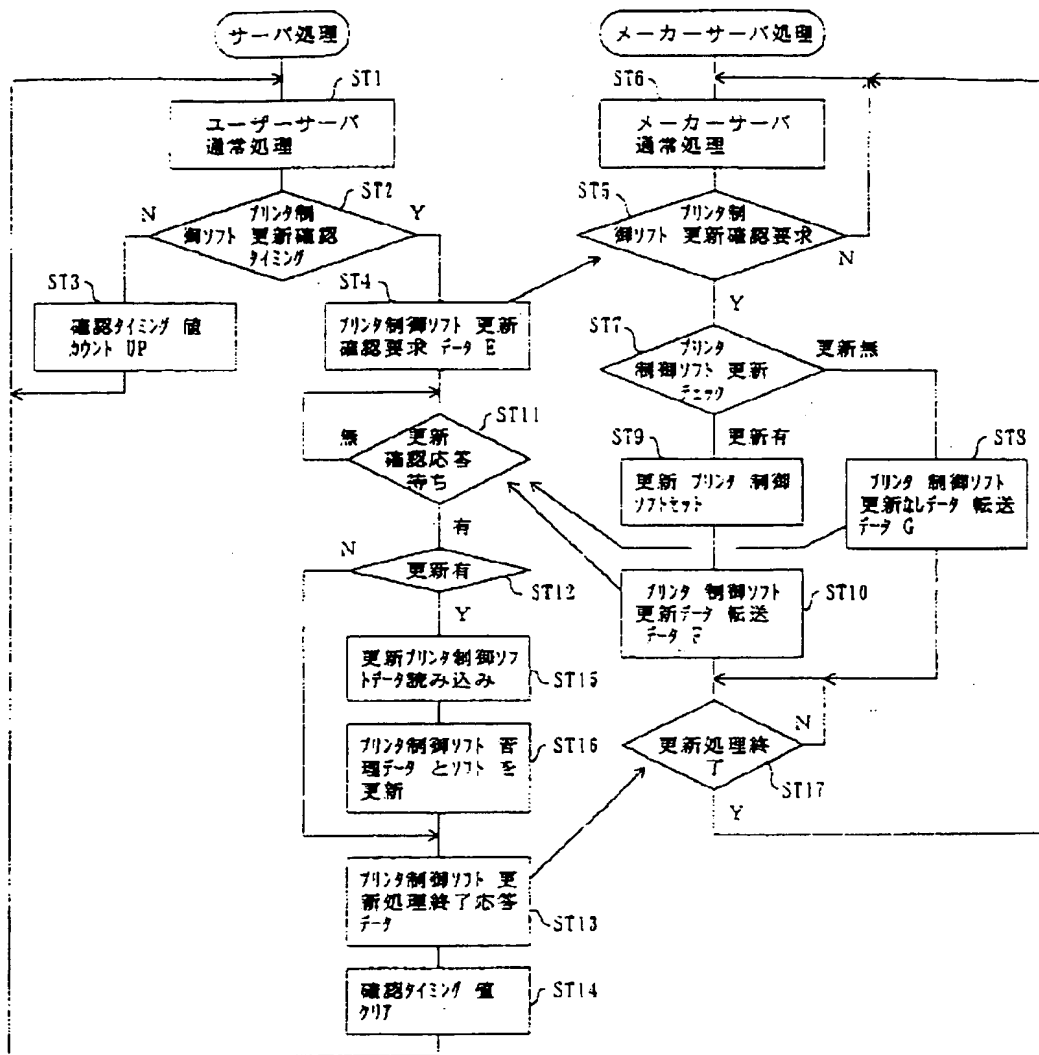
[Drawing 11]



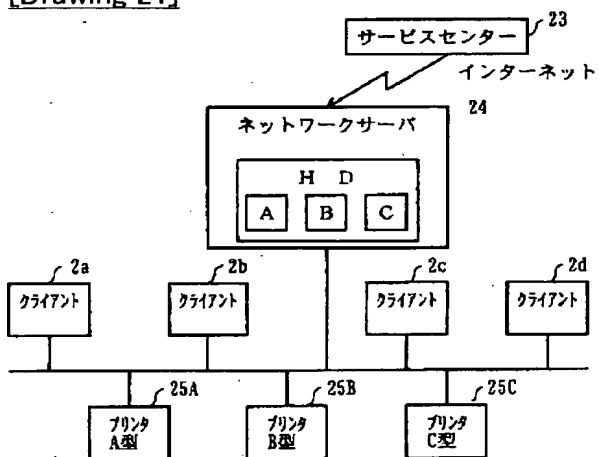
[Drawing 18]



[Drawing 7]

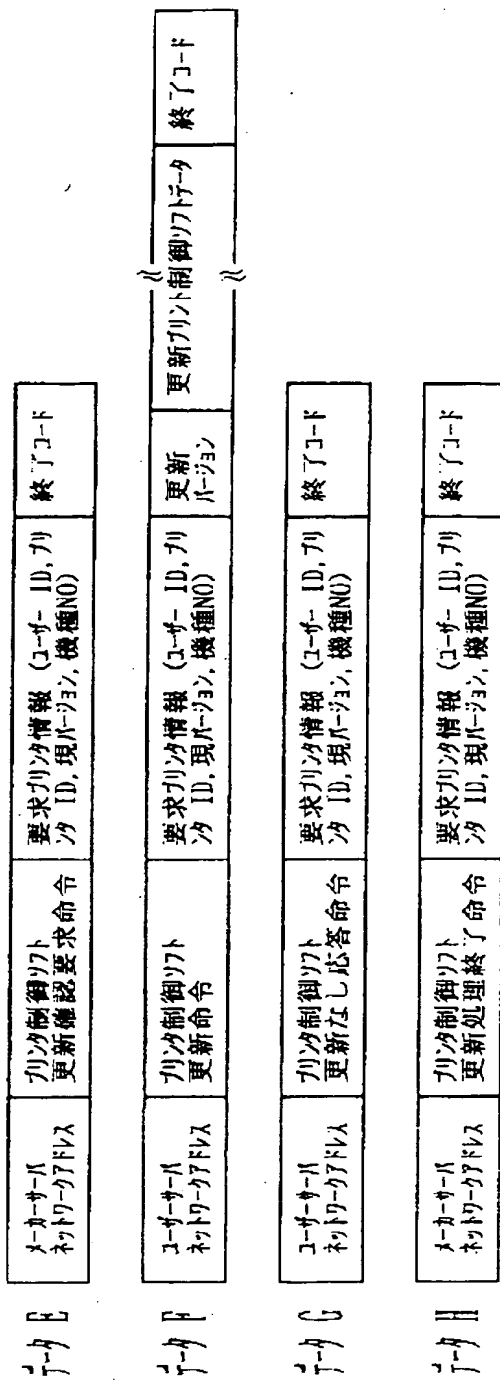


[Drawing 21]



[Drawing 8]

[Drawing 15]



(ユーザーサーバ ↔ ネットワークプリンタ)

データⅠ

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データⅡ

プリント ネットワークアドレス	プリント制御リフト 更新命令	要求プリント情報 (プリント ID, 現バージョン, 機種NO)	更新 バージョン	更新プリント制御ソフトデータ	終了コード
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データⅢ

プリント ネットワークアドレス	プリント制御リフト 更新なし応答命令	要求プリント情報 (プリント ID, 現バージョン, 機種NO)	終了コード
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データⅣ

ユーザーサーバ ネットワークアドレス	プリント制御リフト 更新処理終了命令	要求プリント情報 (プリント ID, 現バージョン, 機種NO)	終了コード
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[Drawing 12]

メーカーサーバ・ワークメモリ

更新確認要求データ

〜 20b

ex)

確認要求プリンタ情報			
ユーザ ID	プリンタID	機種NO	現在バージョン
Y 社	モデル y2	500	ABC 1.02

20

(a)

ユーザ ID	プリンタID	機種NO	現在バージョン	DISK7フレ
Y 社	モデル y1	対象なし	AAA 2.01	AD 1
	モデル y2	1~1000	ABC 1.03	AD 2
	モデル y3	1000~	ABC 2.01	AD 3
⋮	⋮	⋮	⋮	⋮
X 社	モデル	特になし	XXX 1.00	AE 1
	モデル	特になし	YYY 2.00	AE 2

〜 20c

更新プリンタ制御ソフトデータ

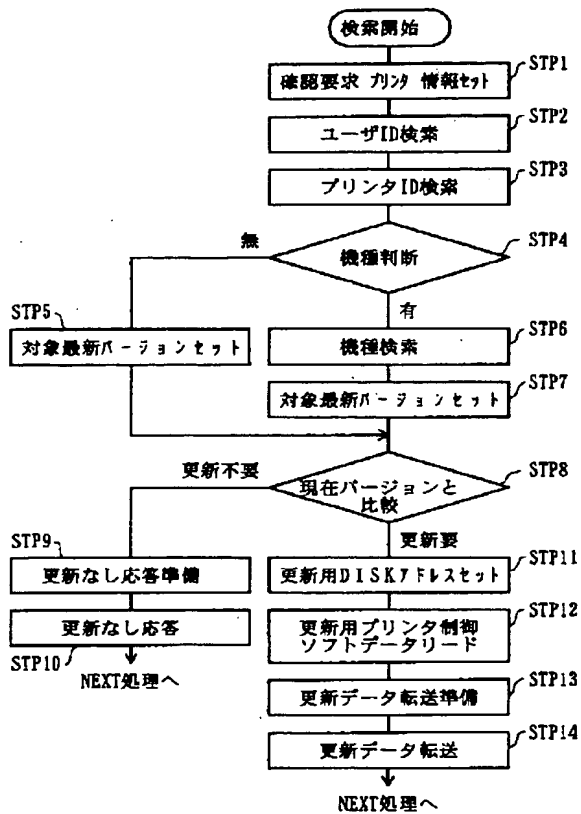
(b)

DISK7フレ	ユーザ ID	プリンタID	号機NO	最新バージョン	プリンタ制御ソフトデータ
AD 1	Y 社	モデル y1	対象なし	AAA 2.01	AAA 2.01 用
AD 2	Y 社	モデル y2	1~1000	ABC 1.03	ABC 1.03 用
AD 3	Y 社	モデル y3	1000~	ABC 2.01	ABC 2.01 用

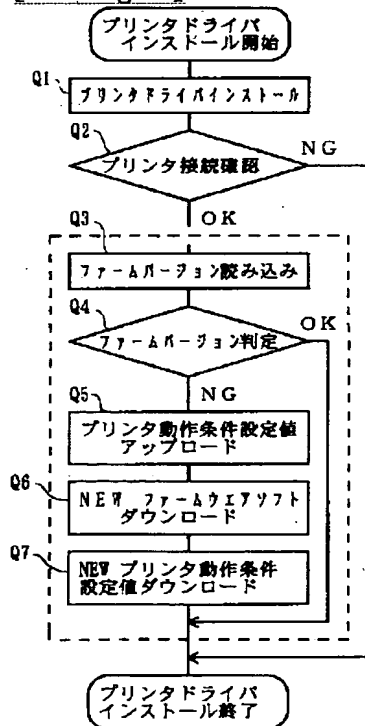
〜 20a

AE 1	X 社	モデル x1	特になし	XXX 1.00	XXX 1.00 用
AE 2	X 社	モデル x2	特になし	YYY 2.00	YYY 2.00 用

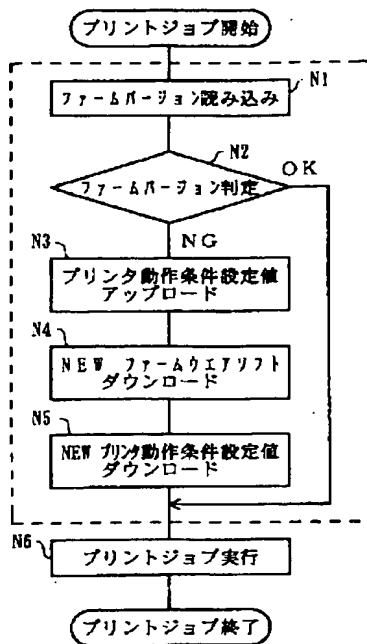
[Drawing 13]



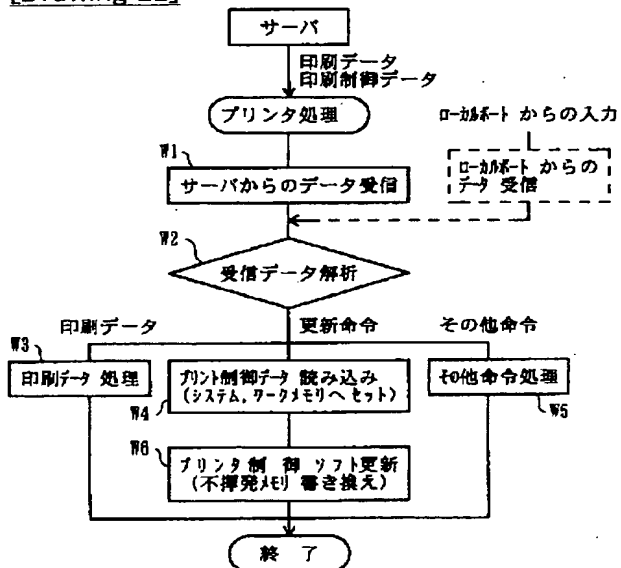
[Drawing 19]



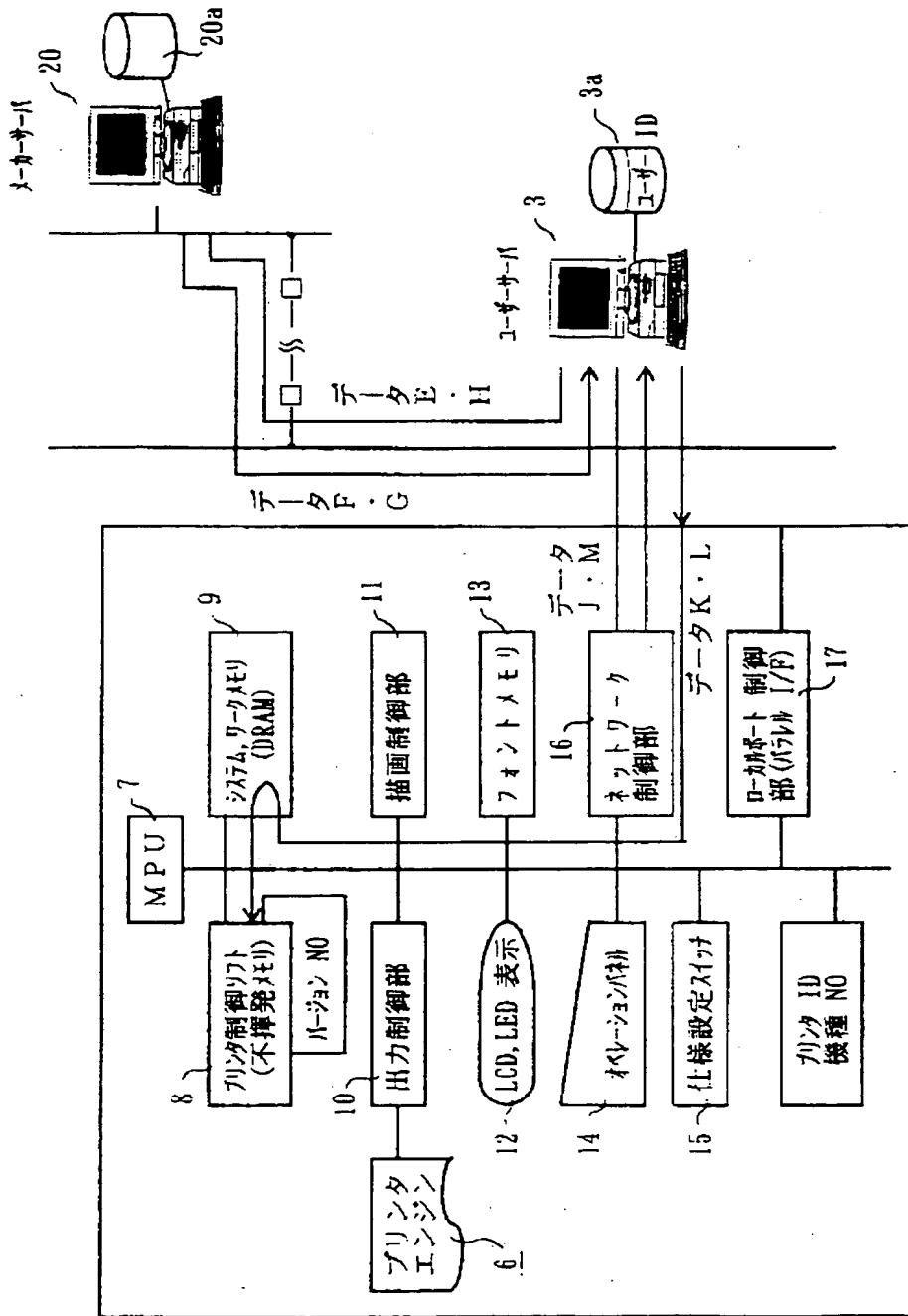
[Drawing 20]



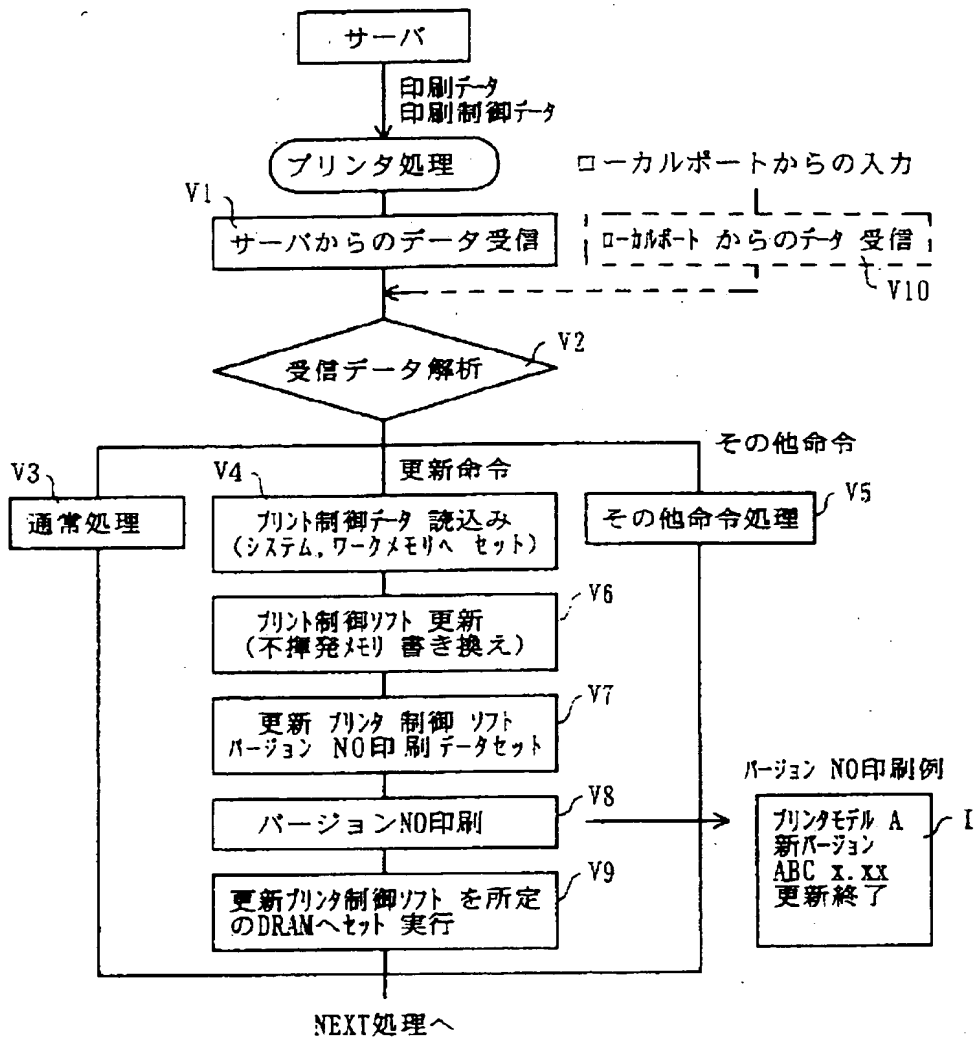
[Drawing 22]



[Drawing 14]



[Drawing 16]



[Drawing 17]



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(71)出願人 000104124

カシオ電子工業株式会社

埼玉県入間市宮寺4084番地

(71)出願人 000001443

カシオ計算機株式会社

東京都渋谷区本町1丁目6番2号

(72)発明者 神田 正男

東京都東大和市桜が丘2丁目229 番地

カシオ電子工業株式会社内

(72)発明者 葛野 修

東京都東大和市桜が丘2丁目229 番地

カシオ電子工業株式会社内

(74)代理人 弁理士 大菅 義之

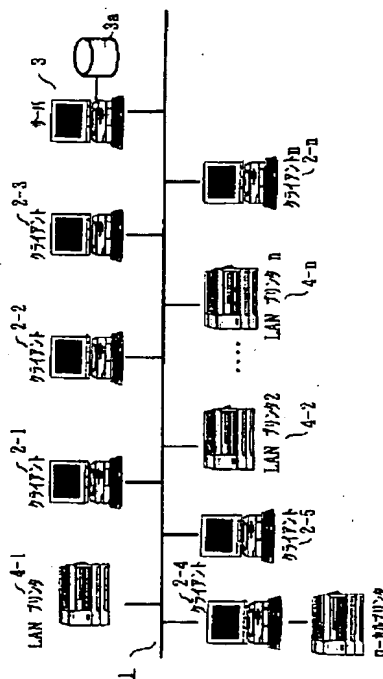
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(54)【発明の名称】 印刷システム

(57)【要約】

【課題】 本発明はコンピュータネットワークに接続された印刷装置を含む印刷システムに関し、特にユーザの希望に基づいて必要な場合に自動的にプリント制御ソフトの更新を行い、またメーカからのプリント制御ソフトの更新処理を一括して行える印刷システムを提供するものである。

【解決手段】 コンピュータネットワークに接続された印刷装置を含む印刷システムに関し、例えばプリンタ装置4-1のプリント制御ソフトを使用する際、プリンタ装置4-1は、電源投入時プリントサーバ3に対しプリント制御ソフトの更新確認要求を行い、プリントサーバ3に新たなプリント制御ソフトが登録されている場合、プリンタ装置4-1に対し新たなプリント制御ソフトを供給し、更新処理を行わせるものである。したがって、プリンタ装置4-1はプリント制御ソフトが更新されている限り新たなプリント制御ソフトによって印刷処理を行うことができ、最新バージョンによる印刷処理が常に可能となる。



【特許請求の範囲】

【請求項 1】 プリントサーバとプリンタ装置が接続されたコンピュータネットワークにおける印刷システムにおいて、

前記プリンタ装置に設けられ、プリント制御ソフトの更新要求を行う更新要求手段と、

前記プリントサーバに設けられ、前記更新要求に対し、前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時、新たなプリント制御ソフトを送信する送信手段と、

前記プリンタ装置に設けられ、前のプリント制御ソフトを前記新たなプリント制御ソフトに更新する更新手段と、

とを有することを特徴とする印刷システム。

【請求項 2】 前記プリントサーバは、前記新たなプリント制御ソフトを記憶する記憶手段を有することを特徴とする請求項 1 記載の印刷システム。

【請求項 3】 前記プリントサーバによるプリント制御ソフトの有無の判断は、プリンタの機種によって行うことを特徴とする請求項 1 記載の印刷システム。

【請求項 4】 ユーザサーバとプリンタ装置を有し、メーカーのサーバに接続されたコンピュータネットワークにおける印刷システムにおいて、

前記ユーザサーバに設けられ、前記メーカーサーバにプリント制御ソフトの更新要求を行う更新要求手段と、

前記メーカーサーバに設けられ、前記更新要求に対し、前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時、新たなプリント制御ソフトを送信する送信手段と、

前記ユーザサーバに設けられ、前のプリント制御ソフトを前記新たなプリント制御ソフトに更新する更新手段と、

を有することを特徴とする印刷システム。

【請求項 5】 前記メーカーサーバは、前記新たなプリント制御ソフトを記憶する記憶手段を有することを特徴とする請求項 4 記載の印刷システム。

【請求項 6】 前記メーカーサーバによるプリント制御ソフトの有無の判断は、プリンタの機種によって行うことを特徴とする請求項 4 記載の印刷システム。

【請求項 7】 前記プリント制御ソフトの更新が行われた時、対応するプリンタ装置によって更新処理が行われたことを示す印刷処理が行われることを特徴とする請求項 1 記載の印刷システム。

【請求項 8】 前記プリント制御ソフトの更新が行われた時、対応するクライアントのコンピュータのディスプレイに更新処理が行われたことを示す印刷処理が行われることを特徴とする請求項 1 記載の印刷システム。

【請求項 9】 前記プリント制御ソフトの更新は、記憶媒体を用いて行うことを特徴とする請求項 1、又 4 記載の印刷システム。

【請求項 10】 前記記憶媒体には、前記プリント制御ソフトと共に対応するプリンタドライバも記憶されていることを特徴とする請求項 9 記載の印刷システム。

【請求項 11】 前記プリント制御ソフトは、前記プリンタ装置のサービスセンターから供給され、ネットワークサーバを介してプリンタ装置に供給されることを特徴とする 1、又は 4 記載の印刷システム。

【請求項 12】 プリント制御ソフトの更新要求を行う更新要求機能と、

10 前記更新要求に対し、前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時、新たなプリント制御ソフトを送信する送信機能と、前のプリント制御ソフトを前記新たなプリント制御ソフトに更新する更新機能と、

をコンピュータに実行させる命令を含むプログラムを格納した前記コンピュータが読み取り可能な記憶媒体。

【請求項 13】 前記メーカーサーバにプリント制御ソフトの更新要求を行う更新要求機能と、

20 前記更新要求に対し、前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時、新たなプリント制御ソフトを送信する送信機能と、

前記ユーザサーバに設けられ、前のプリント制御ソフトを前記新たなプリント制御ソフトに更新する更新と、

をコンピュータに実行させる命令を含むプログラムを格納した前記コンピュータが読み取り可能な記憶媒体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、コンピュータネットワークに接続された印刷装置を含む印刷システムに関する。

【0002】

【従来の技術】近年、LAN（ローカルエリアネットワーク）等のコンピュータネットワークが広く使用され、ネットワークに使用されるプリンタ装置は複数のクライアントに共同使用される。このようなネットワークにおいて、プリンタ装置に使用される制御ソフトにはネットワークとプリンタ装置間でデータの授受を行うプログラムも含まれる。そして、その制御ソフトのメンテナンスは、例えばプリントサーバに登録された書き換え制御ソフトを使用し、ネットワーク管理者の管理のもと、プリンタ自身の機能により制御ソフトの書き換え処理を行っている。

【0003】図 22 は従来のプリンタ装置の制御プログラムの書き換え処理を説明するフローチャートである。同図に示すように、プリントサーバは印刷データ又は印刷制御データを出力し、プリンタ装置はプリンタサーバからの印刷データ又は印刷制御データの受信を行う（ステップ（以下、図 25 において W で示す）1）。次に受信したデータの解析処理を行う（W2）。

50 【0004】ここで、受信したデータが通常の印刷デー

タである時(W2が印刷データ)、通常の印刷処理を行う(W3)。一方、受信したデータがプリント制御データである時(W2が更新命令)、プリント制御データの読み込み処理を行う(W4)。尚、受信したデータがその他の命令である時(W2がその他の命令)、対応する命令処理を実行する(W5)。

【0005】ここで、受信したデータがプリント制御データである時(W2が更新命令)、上述のようにプリント制御データの読み込み処理を行い(W4)、メモリに書き込まれていた前のプリント制御データの更新処理を行う(W6)。

【0006】尚、同図に点線で示す処理は、ローカルポートから印刷データ、又はプリント制御データを受信する場合のフローであり、例えばプリンタ装置に直接コンピュータが接続されている場合の例である。この場合にも、印刷データ又はプリント制御データは解析処理により解析され、プリント制御データである場合、プリンタ装置内のメモリに書き込まれていた前のプリント制御データは新たなプリント制御データに更新される(W4、W6)。

【0007】

【発明が解決しようとする課題】上述のような従来の印刷システムにおいては、以下の問題が発生する。

(イ) 先ず、従来のシステムにおいては、プリント制御データが更新された時、当該印刷システムのネットワーク管理者が対象となるプリンタ装置の利用状態を管理、判断し、必要に応じてプリント制御データの書き換え処理を行っていた。このため、従来の印刷システムではネットワーク管理者の管理可能な範囲のプリンタ装置に対してのみプリント制御データの更新処理を行うことができた。

【0008】(ロ) 一方、プリント制御データの更新はユーザの要望による場合もあるが、メーカー側からの要望による場合も多い。例えば、プリンタ装置の機能強化やバグ対策等のため全ユーザを対象にしてプリント制御データの更新を必要とする場合も多い。しかし、従来の印刷システムにおいては、このような場合でも更新対象となるプリンタ装置に対し、個別的にプリント制御データの更新処理を行っていた。

【0009】本発明の課題は上記従来の実情に鑑み、ユーザの希望に基づいて必要な場合に自動的にプリント制御データの更新を行い、またメーカーからのプリント制御データの更新処理を一括して行える印刷システムを提供するものである。

【0010】

【課題を解決するための手段】請求項1記載の発明は上記課題を解決するため、少なくともプリントサーバとプリンタ装置が接続されたコンピュータネットワークにおける印刷システムにおいて、前記プリンタ装置に設けられ、プリント制御ソフトの更新要求を行う更新要求出力

手段と、前記プリントサーバに設けられ、前記更新要求に対し前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時新たなプリント制御ソフトを送信する送信手段と、前記プリンタ装置に設けられ、前のプリント制御ソフトを前記新たなプリント制御ソフトに更新する更新手段とを有する印刷システムを提供することにより達成できる。

【0011】例えば、プリンタ装置は所定のタイミングで、プリント制御ソフトの更新要求を行う。この所定のタイミングはプリンタ装置への電源供給であってもよく、又はタイマーによる一定タイミングの設定によってもよく、このような所定のタイミングに従ってプリント制御ソフトの更新要求を出力する。そして、この出力に従ってプリントサーバ側では、プリント制御ソフトの更新を判断し、新たなプリント制御ソフトをプリンタ装置に送信してプリンタ装置側で新たなプリント制御ソフトの更新処理を行う。

【0012】このように構成することにより、プリンタ装置では電源投入時等において、必ずプリンタ装置のプリント制御ソフトの更新確認が行われ、新たなプリント制御ソフトに変わっている場合、確実にプリント制御ソフトの更新処理が行われるので、常に最新バージョンのプリント制御ソフトによって印刷処理を行うことができる。

【0013】請求項2の記載は、前記請求項1記載の発明において、前記プリントサーバは、前記新たなプリント制御ソフトを記憶する記憶手段を有する構成である。すなわち、通信回線やフロッピーディスク等のよりプリントサーバでは常に新たなプリント制御ソフトを供給を受け記憶手段に格納しておく。

【0014】このように構成することにより、プリンタ装置の更新確認要求に対して直ちに対応することができる。請求項3の記載は、前記請求項1記載の発明において、前記プリントサーバによるプリント制御ソフトの有無の判断は、プリンタの機種によって行う構成である。

【0015】ここで、プリンタの機種にはユーザIDやプリンタIDも含まれ、また機種ナンバー(機種No.)も含まれる。そして、これらの情報に従って、プリントサーバは更新要求のあったプリンタ装置のプリント制御ソフトに対応するプリンタ装置に供給する。請求項4記載の発明は上記課題を解決するため、ユーザサーバとプリンタ装置を有し、メーカーのサーバに接続されたコンピュータネットワークにおける印刷システムにおいて、前記ユーザサーバに設けられ、前記メーカーサーバにプリント制御ソフトの更新要求を行う更新要求手段と、前記メーカーサーバに設けられ、前記更新要求に対し、前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時、新たなプリント制御ソフトを送信する送信手段と、前記ユーザサーバに設けられ、前のプリント制御ソフトを前記新たなプリント制

御ソフトに更新する更新手段とを有する印刷システムを提供することにより達成できる。

【0016】前記請求項1の発明がプリンタ装置とプリントサーバ間のプリント制御ソフトの更新要求に対する処理であったのに対し、本発明はプリントサーバとメーカーサーバ間のプリント制御ソフトの更新要求に対する処理である。

【0017】例えば、プリントサーバは所定のタイミングで、プリント制御ソフトの更新要求を行う。この所定のタイミングは、例えばタイマー等で設定し、このよう
10 なた所定のタイミングに従ってプリント制御ソフトの更新要求を出力する。メーカーサーバ側では、プリント制御ソフトの更新を判断し、新たなプリント制御ソフトをプリントサーバに送信してプリントサーバで新たなプリント制御ソフトの更新処理を行う。

【0018】このように構成することにより、プリントサーバには例えばタイマーのタイムアップに合わせて、必ずプリントサーバのプリント制御ソフトの更新確認が行われ、新たなプリント制御ソフトに変わっている場
20 合、プリントサーバにおいて確実にプリント制御ソフトの更新処理が行われるので、常に最新バージョンのプリント制御ソフトをプリントサーバに用意することができる。

【0019】請求項5の記載は、前記請求項4記載の発明において、前記メーカーサーバは、前記新たなプリント制御ソフトを記憶する記憶手段を有する構成である。本例は上記請求項2の記載に対応し、通信回線やフロッ
30 ピーディスク等のよりメーカーサーバでは常に新たなプリント制御ソフトの供給を受け、記憶手段に格納しておく。このように構成することにより、プリントサーバの更新確認要求に対して直ちに対応することができる。

【0020】請求項6の記載は、前記請求項4記載の発明において、前記メーカーサーバによるプリント制御ソフトの有無の判断は、プリンタの機種によって行う構成である。

【0021】本例は上記請求項3の記載に対応し、プリンタの機種にはユーザIDやプリンタIDも含まれ、また機種ナンバー（機種No）も含まれる。そして、これらの情報に従って、メーカーサーバは更新要求のあった
40 プリンタ装置のプリント制御ソフトを対応するプリントサーバに供給する。請求項7の記載は、前記請求項1記載の発明において、前記プリント制御ソフトの更新が行われた時、対応するプリンタ装置によって更新処理が行われたことを示す印刷処理が行われる構成である。

【0022】このように構成することにより、プリンタ装置に新たなプリント制御ソフトが組み込まれた時その事実が印刷出力され、ユーザは容易にプリント制御ソフトの更新を知ることができる。

【0023】請求項8の記載は、前記請求項1記載の発明において、前記プリント制御ソフトの更新が行われた
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時、対応するクライアントのコンピュータのディスプレイに更新処理が行われたことを示す印刷処理が行われる構成である。

【0024】本例は、更にプリンタ装置に新たなプリント制御ソフトが組み込まれた時その事実を対応するクライアントのディスプレイに表示し、確実にプリント制御ソフトの更新を知らせるものである。

【0025】請求項9の記載は、前記請求項1又は4記載の発明において、前記プリント制御ソフトの更新は、記憶媒体を用いて行う構成である。ここで、記憶媒体としてはフロッピーディスク、ハードディスク、コンパクトディスク等の記憶媒体があり、これらの記憶媒体に
プリント制御ソフトを組み込みプリント制御ソフトの更新に使用する。

【0026】請求項10の記載は、前記請求項9の記載において、前記記憶媒体には、前記プリント制御ソフトと共に対応するプリンタドライバも記憶されている構成である。

【0027】このように構成することにより、プリンタドライバと対応するプリント制御ソフトを1個の記憶媒体を使用して更新することができ、正確にプリンタ
ドライバとプリント制御ソフトのインストールを行うことができる。

【0028】請求項11の記載は、前記請求項1又は4の発明において、前記プリント制御ソフトは、前記プリンタ装置のサービスセンターから供給される構成である。ここで、サービスセンターは上記プリンタ装置の
メーカーや総販売店等が対応し、サービスセンターから直接プリントサーバやプリンタ装置にプリント制御ソフトを供給するだけではなく、ネットワークサーバを介して供給するように構成してもよい。

【0029】請求項12の発明は上記課題を解決するため、プリント制御ソフトの更新要求を行う更新要求機能と、前記更新要求に対し、前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時、新たなプリント制御ソフトを送信する送信機能と、前のプリント制御ソフトを前記新たなプリント制御ソフトに更新する更新機能とをコンピュータに実行させる命令を含むプログラムを格納した前記コンピュータが読み取り可能な記憶媒体を提供することによって達成
50 できる。

【0030】また、請求項13の発明は上記課題を解決するため、前記メーカーサーバにプリント制御ソフトの更新要求を行う更新要求機能と、前記更新要求に対し、前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時、新たなプリント制御ソフトを送信する送信機能と、前記ユーザサーバに設けられ、前のプリント制御ソフトを前記新たなプリント制御ソフトに更新する更新とをコンピュータに実行させる命令を含むプログラムを格納した前記コンピュータが

読み取り可能な記憶媒体を提供することによって達成できる。

【0031】上記請求項12、13の発明は記憶媒体に上記ソフトを組み込んで行うものである。

【0032】

【発明の実施の形態】以下、本発明の実施形態例を図面を用いて詳細に説明する。

<第1実施形態例>図1は、第1実施形態例を説明する印刷システムの構成図である。

【0033】同図において、ネットワーク1には複数のクライアント2-1~2-n、サーバ3、複数のプリンタ装置4-1~4-nが接続されている。また、クライアント2-1~2-nは、例えばパーソナルコンピュータであり、それぞれ内蔵するアプリケーションプログラムで作成した印刷データをサーバ3（以下、プリントサーバ3として説明する）に出力する。プリントサーバ3は印刷処理の際の複数のプリンタ装置の管理、及び制御を行う。また、プリントサーバ3はクライアントから供給される印刷データを例えば磁気ディスク等の補助記憶装置に記憶し、印刷制御を行う。プリンタ装置2-1~2-nは、例えば汎用性のある印刷装置であり、各種クライアント2-1~2-nの仕様に対応して印刷処理が可能である。

【0034】尚、各クライアント2-1~2-nは、不図示のCPU、アプリケーションプログラム、RAM、プリントドライバ等を有し、更にネットワーク1を介してプリンタ装置4-1~4-nと直接通信可能な通信・インターフェイス（I/F）を有する。

【0035】一方、図2は上述のプリントサーバ3とプリンタ装置4-1~4-nの接続構成を説明する図である。プリントサーバ3はクライアント2-1~2-nから出力された印刷データを管理及び制御し、印刷データをプリンタ装置4-1~4-nに出力する。プリンタ装置4-1~4-nはプリンタコントローラ5とプリンタエンジン6で構成され、プリントサーバ3から出力される印刷データはプリンタコントローラ5に供給される。

【0036】プリンタコントローラ5は、MPU7、不揮発性メモリ8、システム・ワークメモリ9、出力制御部10、描画制御部11、ディスプレイ12、フォントメモリ13、オペレーションパネル14、仕様設定スイッチ15、ネットワーク制御部16、ローカルポート制御部17で構成されている。尚、上述のネットワーク制御部16にはLANボードが接続され、プリントサーバ3又は各クライアント2-1~2-nとの間でデータの授受を行う。また、上述のローカルポート制御部17にはセントロニクスボードが接続され、例えばローカルポート制御部17を介して、プリンタ装置4-1~4-nに直接接続されたパーソナルコンピュータ等との間でデータの授受を行い。

【0037】尚、上述のプリンタ装置4-1~4-nの

通常の印刷処理においては、プリントサーバ3から入力した印刷データは、ネットワーク制御部16を介してシステム・ワークメモリ9内の受信バッファに格納され、MPU7の解析処理によってコマンド解析され、例えばフォントメモリ13によってパターンデータに変換された画像データがシステム・ワークメモリ9内のフレームメモリに展開される。そして、フレームメモリに用紙1枚分の画像データが展開されると、出力制御部10を介してプリンタエンジン6に画像データが出力され、用紙に画像データが印刷される。

【0038】一方、本例では上述の印刷処理を行うためのプリント制御ソフトの更新処理を特に説明するものであり、このプリント制御ソフトは上述の不揮発性メモリ8に記憶されている。尚、この不揮発性メモリ8は、例えばEEPROMやフラッシュメモリで構成する。以上の構成において、以下に処理動作を説明する。

【0039】図3はプリント制御ソフトの更新処理を説明するフローチャートである。同図に示す左側がプリンタ装置4-1~4-nの処理であり、右側がプリントサーバ3の処理を示す。まず、プリンタ装置4-1~4-n（以下、プリンタ装置を代表してプリンタ装置4-1で示す）は電源オンによってハード回路のイニシャル処理を行う（ステップ（以下、図3においてSで示す）1）。例えば、MPU7のレジスタ内のデータのクリア処理や、出力制御部10内に残るデータ等をクリアする。

【0040】次に、システム・ワークメモリ9のイニシャル処理を行う（S2）。この処理は、システム・ワークメモリ9のワークエリアや、受信バッファ、フレームメモリ内の残るデータのクリア処理であり、このクリア処理の後、不揮発性メモリ8に記憶されているプリント制御ソフトをシステム・ワークメモリ9のワークエリアに読み出す（S3）。

【0041】次に、新たなプリント制御ソフトの更新確認要求を行う（S4）。この時、プリンタ装置4-1から出力されるデータは図4に示すデータBである。このデータBは同図に示すように、「ネットワークプリンタのアドレス」と、「プリント制御ソフトの更新確認要求（コマンド）」と、「要求プリンタの情報」と、「終了コード」が含まれている。例えば、「ネットワークプリンタのアドレス」には、プリント制御ソフトの更新確認要求を行うプリンタ装置のアドレス（例えば、プリンタ番号）が記述され、「プリント制御ソフトの更新確認要求（コマンド）」にはプリンタ制御専用のコマンド、例えば“ESC**”等のデータが記述されている。また、「要求プリンタの情報」としては、プリンタ装置（例えば、プリンタ装置4-1）の機種名、及び現バージョンのデータが記述されている。さらに、「終了コード」にはプリンタ制御専用のコマンド、例えば“ESC××”が記述されている。

【0042】このデータBはプリントサーバ3に送られると、プリントサーバ3側では上述のデータが供給されるまで通常のサーバ処理、例えばプリンタ装置4-1~4-nの管理等の処理を行っているが(S5がN(ノー)、S6)、上述のデータBが入力すると(S5がY(イエス))、プリント制御ソフトの更新チェックを行う(S7)。例えば、このプリント制御ソフトの更新チェックは、プリントサーバ3のハードディスク3aに記憶されたプリント制御ソフトが更新されたか否かの判断である。

【0043】ここで、未だプリント制御ソフトが更新されていないければ(S7が更新無)、データCをプリンタ装置4-1に送信する(S8)。このデータCは、前述の図4に示すように、「ネットワークプリンタのアドレス」、「プリント制御ソフトの更新なし応答命令」、及び「終了コード」で構成され、「ネットワークプリンタのアドレス」と「終了コード」は前述の例と同じである。尚、「プリント制御ソフトの更新なし応答命令」は、プリンタ制御専用のコマンド、例えば“ESC++”等のデータが記述されている。

【0044】一方、上述の判断(S7)において、プリント制御ソフトが更新されていると判断すれば(S7が更新有)、プリントサーバ3は新たな(更新)プリント制御ソフトをセットし(S9)、新たなプリント制御ソフトを記述したデータAを作成しプリンタ装置4-1に出力する(S10)。ここで、データAは図4に示すように、「ネットワークプリンタのアドレス」、「プリント制御ソフトの更新命令(コマンド)」、「(新たな)プリント制御ソフトデータ」、「終了コード」で構成されている。

【0045】プリンタ装置4-1側では、前述のデータBを出力した後更新確認の応答を待ち(S11が無)、上述のデータCがプリントサーバ3から供給されると(S11が有)、プリンタ装置4-1はデータCの内容を解析し、データCに含まれる「プリント制御ソフトの更新なし応答命令」に従って新たなプリント制御ソフトの設定は無いものとしてプリント制御ソフトの更新処理を終了し、データDをプリントサーバ3に出力する(S12)。

【0046】一方、前述のデータBを出力した後更新確認の応答を待ち(S11が無)、上述のデータAがプリントサーバ3から供給されると(S11が有)、プリンタ装置4-1はデータAの内容を解析し、データAに含まれる「プリント制御ソフトの更新命令(コマンド)」に従ってプリント制御ソフトを更新する。すなわち、データAに含まれる「(新たな)プリント制御ソフトデータ」を読み出し(S13)、システム・ワークメモリ9に新たなプリント制御ソフトを格納した後、不揮発性メモリ8にプリント制御ソフトを書き込む(S14)。その後、リセット処理を行い更新されたプリント制御ソフト

トを実行し(S15)、プリント制御ソフトの更新処理を終了し、データDをプリントサーバ3に出力する(S12)。

【0047】尚、データDは図4に示すように、「ネットワークプリンタのアドレス」、「プリント制御ソフトの更新処理終了命令」、「要求プリンタのアドレス」、「終了コード」で構成され、プリントサーバ3側ではこのデータDが供給されると更新処理を終了し(S16がY)、通常のサーバ処理に戻る(S6)。

10 【0048】また、プリントサーバ3における上述のプリント制御ソフトの更新の判断は、以下のように行う。図5はプリントサーバ3、及びハードディスク3aのメモリ構成である。プリントサーバ3側のワークメモリには前述のデータBが供給されるエリア3bと、更新バージョンテーブル3cが設けられ、更新バージョンテーブル3cにはプリント制御ソフトが更新される毎に新たなプリント制御ソフトのバージョンが書き込まれる。例えば、バージョン“AAA1.00”、バージョン“ABC1.02”・・・バージョン“XYZ1.11”の各バージョンデータが書き込まれる。

20 【0049】また、ハードディスク3aには上述のバージョンに対応したプリント制御ソフトのデータが記憶されている。例えば、バージョン“AAA1.00”に対してはハードディスク3a上の記憶エリア3a-1に対応するプリント制御ソフトが記憶され、バージョン“ABC1.02”に対してはハードディスク3a上の記憶エリア3a-2に対応するプリント制御ソフトが記憶され、・・・バージョン“XYZ1.11”に対してはハードディスク3a上の記憶エリア3a-3に対応するプリント制御ソフトが記憶されている。

30 【0050】したがって、プリントサーバ3ではプリンタ装置4-1からデータBが供給されると、データBに含まれる「要求プリンタの情報」からバージョン情報を読み出し、このエリアに書き込む。そして、プリントサーバ3内の更新バージョンテーブル3cのバージョン情報と比較し、バージョン番号が一致していればプリント制御ソフトの更新はないものと判断し、一方バージョン番号が一致していなければプリント制御ソフトが更新されたものと判断する。例えば、図5に示す例の場合、データBに含まれ、エリア3bに書き込まれるバージョンは“ABC1.01”であり、更新バージョンテーブル3cには“ABC1.02”のバージョンデータが書き込まれているので一致せず、新たなプリント制御ソフトの更新を必要とする。そしてこの場合、更新バージョンテーブル3cに記憶されたバージョン“ABC1.02”のプリント制御ソフトをハードディスク3aから読み出し、新たなプリント制御ソフトとしてプリンタ装置4-1に出力する。

50 【0051】以上のように処理することにより、例えばプリンタ装置4-1の電源をオンした時、図3に示す処

理が実行され、プリンタ装置4-1のプリント制御ソフトが新たなプリント制御ソフトに更新されている時、自動的にプリント制御ソフトが更新され、ネットワーク管理者の煩雑な操作を必要としない。

＜第2実施形態例＞次に、本発明の第2実施形態例について説明する。

【0052】図6は、第2実施形態例を説明する印刷システムの構成図である。同図において、ネットワーク1には複数のクライアント2-1～2-n、プリントサーバ3、複数のプリンタ装置4-1～4-nが接続されている。この構成は前述の図1と同じであり、クライアント2-1～2-nは、例えばパーソナルコンピュータであり、それぞれ内蔵するアプリケーションプログラムで作成した印刷データをプリントサーバ3に出力し、汎用性のあるプリンタ装置によって印刷処理を行うものである。

【0053】本例においては、上述のユーザ環境であるLAN19にメーカ環境であるメーカのサーバ20（以下、メーカサーバ20で示す）が接続された構成である。ここで、LAN19とメーカサーバ20の接続は、例えばインターネット回線を介して行い、又は公衆回線を介して行われている。また、メーカサーバ20にはハードディスク20aが接続されている。

【0054】尚、プリンタ装置4-1～4-nの構成は前述の図2と同様であり、プリンタコントローラ5とプリンタエンジン6で構成され、プリンタコントローラ5には前述と同様、MPU7、不揮発性メモリ8、システム・ワークメモリ9、等が設けられている。

【0055】以上の構成において、以下に第2実施形態例の処理動作を説明する。図7は、本例のプリント制御ソフトの更新処理を説するフローチャートである。本例において、同図に示す左側がプリントサーバ3（以下、ユーザサーバ3という）の処理であり、右側がメーカサーバ20の処理を示す。

【0056】先ず、ユーザサーバ3は通常処理を行っており（ステップ（以下、図7においてSTで示す）

1）、複数のプリンタ装置4-1～4-nの管理、制御を行っている。次に、プリント制御ソフトの更新タイミングを判断し（ST2）、プリント制御ソフトの更新タイミングでなければ（ST2がN）、確認タイミング値をカウントアップし（ST3）、確認タイミング値に達すると判断（ST2）がYとなる。したがって、上述の確認タイミング値に従ったタイミングでプリント制御ソフトの確認処理を行う。次に、プリント制御ソフトの確認処理は、先ず「プリント制御ソフトの更新確認要求（コマンド）」を出力する（ST4）。この更新確認要求は、図8に示すデータEをメーカサーバ20に出力することによって行う。ここで、データEのデータ構成は図8に示すように、「メーカサーバのネットワークアドレス」、「プリント制御ソフトの更新確認要求」、

「要求プリンタの情報」、「終了コード」であり、特に「要求プリンタの情報」の中にはユーザID、プリンタID、現バージョン、機種ナンバー（機種No）の情報が含まれている。

【0057】メーカサーバ20側ではプリント制御ソフトの確認要求を受信するまで通常処理を行っており（ST5がN、ST6）、上述のデータEが入力すると（ST5がY）、プリント制御ソフトの更新チェックを行う（ST7）。例えば、このプリント制御ソフトの更新チェックは、メーカサーバ20のハードディスク20aに記憶されたプリント制御ソフトが更新されたか判断するものである。

【0058】ここで、図9はメーカサーバ20、及びハードディスク20aのメモリ構成を示す。メーカサーバ20側のワークメモリには前述のデータEが供給されるエリア20bと、更新バージョンテーブル20cが設けられ、更新バージョンテーブル20cにはプリント制御ソフトが更新される毎に新たなプリント制御ソフトのバージョンが書き込まれる。例えば、バージョン“AAA2.05”、バージョン“ABC1.02”、等の各バージョンデータが書き込まれる。

【0059】また、ハードディスク20aには上述のバージョンに対応したプリント制御ソフトのデータが記憶されている。例えば、バージョン“AAA2.05”に対してはハードディスク20a上の記憶エリア20a-1に対応するプリント制御ソフトが記憶され、バージョン“ABC1.02”に対してはハードディスク20a上の記憶エリア20a-2に対応するプリント制御ソフトが記憶されている。

【0060】メーカサーバ20では上述のデータEが供給されると、データEに含まれる「要求プリンタの情報」からユーザID、プリンタID、現バージョン、機種ナンバー（機種No）の情報を読み出し、エリア20bに書き込む。そして、更新バージョンテーブル20cに登録されたバージョン情報と比較し、プリント制御ソフトの一致をチェックする（ST7）。

【0061】ここで、プリント制御ソフトが更新されていない場合（ST7が更新無）、データGをユーザサーバ3に送信する（S8）。このデータGは、前述の図8に示すように、「ユーザサーバのネットワークアドレス」、「プリント制御ソフトの更新なし応答命令」、「要求プリンタの情報」、及び「終了コード」で構成され、このデータGを受信したユーザサーバ3ではプリント制御ソフトの更新なしの判断を行うことができる。

【0062】一方、上述の判断（ST7）において、プリント制御ソフトが更新されていると判断すれば（ST7が更新有）、メーカサーバ20は新たな（更新）プリント制御ソフトをセットし（ST9）、新たなプリント制御ソフトを記述したデータFを作成し、ユーザサーバ3に出力する（S10）。ここで、データFは図8に

示すように、「ネットワークプリンタのアドレス」、「プリント制御ソフトの更新命令」、「要求プリンタの情報」、「更新バージョン」、「(新たな)プリント制御ソフトデータ」、「終了コード」で構成されている。

【0063】ユーザサーバ3側では、前述のデータEを出力した後更新確認の応答を待ち(S11が無)、例えば上述のデータGがメーカーサーバ20から供給されると(S11が有)、データGの内容を解析し、データGに含まれる「プリント制御ソフトの更新なし応答命令」に従って新たなプリント制御ソフトの設定は無いものと判断し(ST12がN)、プリント制御ソフトの更新処理を終了する。この時、データHをメーカーサーバ20に出力し(ST13)、前述の確認タイミング値をクリア処理する(ST14)。

【0064】一方、前述のデータEを出力した後更新確認の応答を待ち(ST11が無)、データFがメーカーサーバ20から供給されると(S11が有)、ユーザサーバ3はデータFの内容を解析し、データFに含まれる「プリント制御ソフトの更新命令」に従ってプリント制御ソフトを更新する。すなわち、データFに含まれる「(新たな)プリント制御ソフトデータ」を読み出し(ST15)、ユーザサーバ3内のメモリに新たなプリント制御ソフトを格納する(ST16)。

【0065】図10はユーザサーバ3のメモリ構成を説明する図であり、新たに供給されたプリント制御ソフトとそのバージョンデータが書き込まれるエリア3a、更新バージョンテーブル3c、ハードディスク3aで構成されており、エリア3bに入力した新たなプリント制御ソフトはハードディスク3aの対応する記憶エリアに登録され、バージョンデータは上述の更新バージョンテーブル3cに登録される。

【0066】尚、データHは図8に示すように、「メーカーサーバのネットワークアドレス」、「プリント制御ソフトの更新処理終了命令」、「要求プリンタの情報」、「終了コード」で構成され、メーカーサーバ20側ではこのデータHが供給されると、更新処理を終了し(ST17がY)、通常のサーバ処理に戻る(ST6)。

【0067】以上のように処理することにより、例えばタイマが予め設定した確認タイミング値を計数する度に、図7に示す処理が実行され、メーカーサーバ20に新たなプリント制御ソフトに更新されていれば、自動的にプリント制御ソフトが更新されるものである。
<第3実施形態例>次に、本発明の第3実施形態例について説明する。

【0068】図11は、第3実施形態例を説明する印刷システムの構成図である。同図において、ネットワーク1には複数のクライアント2-1~2-n、プリントサーバ3、複数のプリンタ装置4-1~4-nが接続されている。この構成は前述の図6と同じであり、クライ

アント2-1~2-nは、例えばパーソナルコンピュータであり、それぞれ内蔵するアプリケーションプログラムで作成した印刷データをプリントサーバ3に出力し、汎用性のあるプリンタ装置によって印刷処理を行うものである。

【0069】本例においては、上述のユーザ環境であるLAN19にメーカー環境であるメーカーサーバ20が接続された構成であり、LAN19とメーカーサーバ20の接続は、例えばインターネット回線を介して行い、又は公衆回線を介して行われている。また、メーカーサーバ20にはハードディスク20aが接続されている。

【0070】図12(a)、(b)はメーカーサーバ20のメモリ構成を説明する図であり、同図(a)はメーカーサーバ20内のワークメモリの構成を示し、同図(b)はハードディスク20aの構成を示す。メーカーサーバ20内のワークメモリは、ユーザサーバ3から出力されるプリント制御ソフトの更新確認要求の「要求プリンタの情報」が入力するエリア20b、及び更新バージョン情報が登録された更新バージョンテーブル20cで構成されている。

【0071】エリア20bには前述の「要求プリンタの情報」に含まれるユーザID、プリンタID、現バージョン、機種ナンバー(機種No)の情報が格納される。例えば、同図にはY社のユーザID、モデルy2のプリンタID、「ABC1.02」の現バージョン名、「500」の機種Noが書き込まれる。

【0072】また、更新バージョンテーブル20cには、上述のY社を初め、X社等のプリンタ情報が登録されている。例えば、Y社の場合モデルy1、y2、y3のプリンタIDと、そのバージョンデータ、及びディスクアドレスが登録されている。また、X社の場合、モデルx1、x2のプリンタIDと、そのバージョンデータ、及びディスクアドレスが登録されている。

【0073】一方、ハードディスク20aには上述のディスクアドレスによって指定されるエリアに対応するプリント制御ソフトのデータと、ユーザID等の付随するデータが記憶されている。例えば、ディスクアドレスAD1のエリアには、ユーザIDがY社であり、モデルy1の最新バージョンのプリント制御ソフト“AAA2.01”が登録されている。また、ディスクアドレスAD2のエリアには、同じくユーザIDがY社であり、モデルy2の最新バージョンのプリント制御ソフト“ABC1.03”が登録されている。

【0074】尚、Y社のその他の機種、及びX社等の他社のプリント制御ソフト等の登録内容も同図に示す通りである。以上の構成において、以下に第3実施形態例の処理動作を説明する。

【0075】図13は、本例の処理動作を説明するフローチャートである。本例においては、前述の第2実施形態例で説明したデータEがユーザサーバ3から供給され

た後のメーカーサーバ20の処理動作を説明するものである。

【0076】すなわち、前述のユーザサーバ3からプリント制御ソフトの更新確認を行うためデータEをメーカーサーバ20に出力すると、先ずメーカーサーバ20は「要求プリンタの情報」をエリア20bに書き込む（ステップ（以下STPで示す）1）。例えば、この時エリア20bに書き込まれる情報を同図（a）に示す情報とすると、ユーザIDの項にはY社、プリンタIDの項にはモデルy2、機種Noの項には“500”、現バージョンの項には“ABC1.02”の各データが書き込まれる。

【0077】上述のようにしてエリア20bに各データを書き込んだ後、メーカーサーバ20は先ずユーザIDの検索処理を行う（STP2）。この検索処理は、更新バージョンテーブル3cに登録されたデータの中に更新確認要求のあったユーザのID番号が登録されているか判断する処理である。例えば、上述の例の場合、ユーザIDはY社のID番号であり、更新バージョンテーブル3cに存在し、先ず更新バージョンテーブル3cのY社が検索される。

【0078】次に、プリンタIDの検索処理を行う（STP3）。この検索処理も、更新バージョンテーブル3cに登録されたデータの中に更新確認要求のあったプリンタのID番号が登録されているか判断するものである。例えば、上述の例の場合、プリンタIDはモデルy2であり、更新バージョンテーブル3cに存在する。したがって、次にY社のプリンタ装置の中でモデルy2が選択される。

【0079】次に、機種Noの判断を行う（STP4）。ここで、選択されたプリンタ装置に特別な機種Noが無ければ（STP4が無）、対象となるプリンタ装置の最新バージョンをセットする（STP5）。一方、上述の例のように機種Noが設定されている場合（STP4が有）、機種Noを検索する（STP6）。例えば、上述の例では機種Noが“500”であり、更新バージョンテーブル3cから対応する機種Noのプリント制御ソフトのバージョンデータを読み出す（STP7）。

【0080】次に、上述のようにして読み出した最新バージョンのデータとエリア20bに書き込まれている現在のバージョンデータとを比較する（STP8）。この比較処理の結果、最新バージョンのデータと現バージョンのデータが一致していればプリント制御ソフトの更新処理は不要であり（STP8が更新不要）、データGの出力準備を行う（更新無しの応答準備を行う）（STP9）。そして、データGをユーザサーバ3に出力する（STP10）。

【0081】一方、比較処理の結果（STP8）、最新バージョンのデータと現バージョンのデータが一致して

いなければ（STP8が更新要）、当該機種のプリンタ装置のプリント制御ソフトが更新されたものと判断し、ハードディスク20aを検索し、対応するプリント制御ソフトを読み出す（STP11、STP12）。そして、読み出したプリント制御ソフトをユーザサーバ3に転送する準備を行い（STP13）、例えば前述のデータFとしてユーザサーバ3に出力する（STP14）。

【0082】以上のように本例によれば、プリンタ装置のユーザID、プリンタID、現バージョン、機種ナンバー（機種No）により、プリント制御ソフトの更新判断を自動的に行うことができ、更に便利にプリント制御ソフトの検索、及び設定を行うことができる。

<第4実施形態例>次に、本発明の第4実施形態例について説明する。

【0083】図14は、第4実施形態例を説明する印刷システムの構成図である。同図は、前述の図2と一部の構成が重複する。すなわち、プリントサーバ3とプリンタ装置4-1～4-nの接続構成を説明する図であり、プリンタ装置はプリンタ装置4-1を代表した示している。また、プリンタ装置4-1の構成は前述の通りであり、プリンタコントローラ5とプリンタエンジン6で構成され、プリンタコントローラ5は、MPU7、不揮発性メモリ8、システム・ワークメモリ9、出力制御部10、描画制御部11、ディスプレイ12、フロントメモリ13、オペレーションパネル14、仕様設定スイッチ15、ネットワーク制御部16、ローカルポート制御部17で構成されている。

【0084】本例はユーザサーバ3及びそのハードディスク3aに前述の図12（a）、（b）に示す情報を登録し、プリンタ装置からプリント制御データの更新確認要求があった時、前述のメーカーサーバ20の処理と同じ処理を行い、プリント制御ソフトの更新処理を行うものである。この場合、例えばプリンタ装置4-1からユーザサーバ3に供給されるデータは図15に示すデータJ、Mであり、ユーザサーバ3からプリンタ装置4-1に供給するデータはデータK、Lである。具体的には、データJが「ユーザサーバのネットワークアドレス」、「プリント制御ソフトの更新確認要求」、「要求プリンタの情報」、「終了コード」を有し、プリント制御ソフトの更新要求をユーザサーバ3に対して行う。ユーザサーバ3は前述と同様ユーザID、プリンタID、現バージョン、機種ナンバー（機種No）の情報から、プリント制御ソフトの更新があれば新たなプリント制御ソフトを読み出し、プリンタ装置4-1に登録する。

【0085】したがって、このように構成することによっても、プリント制御ソフトの更新判断を自動的に行うことができ、更にプリント制御ソフトが更新されていれば、自動的にプリント制御ソフトの更新処理を行うことができる。

<第5実施形態例>次に、本発明の第5実施形態例につ

いて説明する。

【0086】図16は、第5実施形態例を説明するフローチャートである。本例は前述の実施形態例で説明したようにプリント制御ソフトが変更された場合、その変更を当該プリンタ装置によって印刷し、プリント制御ソフトの変更を報知するものである。

【0087】以下、具体的に説明すると、プリントサーバ3から印刷データ、又はプリント制御ソフトが供給され、指定されたプリンタ装置は対応する処理を実行する。まず、プリンタ装置（例えば、プリンタ装置4-1はプリンタサーバ3から供給される印刷データ又はプリント制御ソフトを受信する（ステップ（以下、図25においてVで示す）1）。次に、受信したデータの解析処理を行う（V2）。

【0088】ここで、受信したデータが通常の印刷データである時（V2が印刷データ）、通常の印刷処理を行う（V3）。一方、受信したデータがプリント制御ソフトである時（V2が更新命令）、当該プリント制御ソフトを読み込み、システム・ワークメモリ9に格納する（V4）。尚、受信したデータがその他の命令である時（V2がその他の命令）、対応する処理を実行する（V5）。

【0089】ここで、受信したデータがプリント制御ソフトである時（V2が更新命令）、上述のようにプリント制御ソフトの読み込み処理を行い（V4）、メモリに書き込まれていた前のプリント制御データを更新する（V6）。さらに、更新したプリント制御ソフトのバージョンデータ等の情報を読み出し、印刷データとしてセットする（V7）。具体的には、システム・ワークメモリ9内のフレームメモリにビットマップデータとしてプリンタ装置のモデル名、更新バージョン名、更新終了の画像データを作成する。

【0090】次に、出力制御部10を介してプリンタエンジン6に上述の印刷データを出力し、図16にIとして示す印刷を行う（V8）。その後、更新されたプリント制御ソフトのデータを不揮発性メモリ8に登録する（V9）。尚、同図に点線で示す処理（V10）は、ローカルポートから印刷データ、又はプリント制御ソフトを受信する場合の処理であり、例えばプリンタ装置に直接コンピュータが接続されている場合である。この場合にも、印刷データ又はプリント制御ソフトは解析処理により解析され、プリント制御ソフトである場合、プリンタ装置内のメモリに書き込まれていた前のプリント制御ソフトは新たなプリント制御ソフトに更新され、更新の事実を示す印刷処理が実行される（V4、V6～V9）。

【0091】以上のように処理することによって、プリント制御ソフトが自動的に更新された場合でも、更新の事実を用紙に印刷した出力することによって、ユーザはプリント制御ソフトの更新を知ることができる。

<第6実施形態例>次に、本発明の第6実施形態例について説明する。

【0092】図17は、第6実施形態例を説明するフローチャートである。本例は前述の実施形態例で説明したように、プリント制御ソフトが変更された場合、その変更を当該プリンタ装置によって印刷し、プリント制御ソフトの変更を報知すると共に、クライアントのコンピュータのディスプレイにもプリント制御ソフトの変更を報知するものである。以下、具体的に説明する。

【0093】クライアントは前述のように、ネットワーク1に接続されたコンピュータであり、例えばプラグ&プレイ機能を有するパーソナルコンピュータである。まず、クライアント（例えば、クライアント2-1）はネットワーク1を介してプリンタ装置への接続が完了したか判断する（ステップ（以下、図17においてはUで示す）1）。次に、ドライバがインストールされているか判断する（U2）。ここで、ドライバがインストールされていれば、アプリケーションを起動し（U2がY、プリント制御ソフトのバージョンが同じであるか判断し（U4）、バージョンが同じであれば書き換えが不要であるので、当該アプリケーションによって通常の印刷処理を実行する（U5）。ドライバがインストールされていない（U2がN）、ドライバのインストールを要求し、必要なドライバを例えばフロッピーディスクからインストールする（U6がY、U7）。

【0094】次に、インストールしたプリント制御ソフトのバージョンがプリンタ装置4-1のバージョンに一致するか判断する（U8）。この判断は前述の判断（U4）と同じものであり、バージョンが一致しない場合にはプリント制御ソフトの書き換えが必要となる（U9がY、U4がY）。この場合、前述の実施形態例で説明したように、データB、又はデータEを出力し、プリント制御ソフトの更新確認要求をプリントサーバ3に対して行い、更新が必要な時には新たなプリント制御ソフトをダウンロードする（U10）。

【0095】一方、プリンタ装置4-1ではプログラム（プリント制御ソフト）の書き換え処理があるか否かを判断し（U10）、ない場合には通常の印刷処理を行う（U11）。一方、プログラム（プリント制御ソフト）の書き換え処理が必要である場合には前述の不揮発性メモリ8に新たなプリント制御ソフトに登録する（U12）。そして、書き換えフラグをシステム・ワークメモリ9に登録し（U13）、プリンタ装置4-1をリセットする（U14）。このリセット処理により、プリンタ装置4-1の制御は新たなプリント制御ソフトに切り替えられ、上述のフラグがオンしているか否かを判断し（U15）、オンであればシステム・ワークメモリ9の登録したフラグをリセットし、自己印字を行う（U15、U16）。

【0096】この自己印字は、前述の第5実施形態例と

同様、更新したプリント制御ソフトのバージョンデータ等の情報を読み出し、プリンタ装置のモデル名、更新バージョン名、更新終了の画像データを作成し、出力制御部10を介してプリンタエンジン6に上述の印刷データを出力し、用紙に印刷を行う。尚、上述の自己印字終了を記憶する(U18)。

【0097】次に、プラグ&プレイ機能等により、クライアントにプリンタ装置4-1の情報を作成してクライアントに通知する(U19~U21)。一方、この通知を受けたクライアントはプリント制御ソフトの書き換えが行われたことをディスプレイに表示する(U22、U23)。この表示は、例えば上述の印刷処理と同じ上述を表示する。

【0098】したがって、このように構成することにより、本例によればプリンタ装置のプリント制御ソフトが書き換えられた際、プリント制御ソフトの更新情報が用紙に印字されるだけでなく、印刷を指示したクライアントのディスプレイにも同じ更新情報が表示され、プリント制御ソフトが更新されたことを確実にユーザに報知することができる。

<第7実施形態例>次に、本発明の第7実施形態例について説明する。

【0099】図18は、第7実施形態例を説明するフローピーディスクである。本例はフローピーディスク等の記憶媒体にプリンタのドライバファイルを記憶すると共に、プリント制御ソフト(ファームウェア)のダウンロードファイルも記憶し、1枚の記憶媒体に対応するドライバファイルとプリント制御ソフト(ファームウェア)を記憶することによりバージョンを誤ることなくプリンタ装置を駆動するものである。

【0100】以下、図19、図20に示すフローチャートを用いて具体的に説明する。まず、図19に示すフローチャートはクライアントに対するプリンタドライバのインストールを説明するフローチャートである。

【0101】まず、プリンタドライバのインストールを行う(ステップ(以下、図19においてQで示す)

1)。次に、プリンタ装置(例えば、プリンタ装置4-1)の接続状態を判断し、プリンタ装置4-1が接続されていない場合には処理を終了する(Q2がNG)が、プリンタ装置4-1が接続されていれば(Q2がOK)、プリント制御ソフトのバージョンデータを読み出す(Q3)。

【0102】次に、プリント制御ソフトのバージョンが正しいか判断する(Q4)。この判断は、ドライバプログラムにプリント制御ソフトのバージョンテーブルを持たせることにより、当該ドライバが読み込んだプリント制御ソフトの取り扱いが可能か否かを判断するものである。ここで、プリンタ装置4-1のプリント制御ソフトが当該ドライバに対応したものであれば(Q4がOK)、インストール処理を終了する。一方、当該ドライ

バによって取り扱えないプリント制御ソフトであれば(Q4がNG)、プリンタ装置の動作条件設定値の送信をプリンタ装置4-1に要求し、プリンタ装置4-1から出力される動作条件設定値をアップロードして一時記憶する(Q5)。

【0103】次に、新しいプリント制御ソフトをプリンタ装置4-1に送信する(ダウンロードする)(Q6)。さらに、一時記憶したプリンタ装置の動作条件設定値を新しいプリント制御ソフト用に変更してプリンタ装置4-1に送信する(Q7)。

【0104】以上のようにして、新たなドライバをクライアントにインストールする際、対応するプリンタ装置のプリント制御ソフトを確認し、プリント制御ソフトが新たにインストールしたドライバに対応しない場合にはプリント制御ソフトも新たなドライバに対応したプリント制御ソフトに更新することにより、ドライバとプリント制御ソフトが対応しないことによる印刷不能等を回避することができる。

【0105】一方、図20に示すフローチャートはクライアントに対するドライバの設定において、たまたまプリンタ装置が接続されていない場合、ドライバのみをインストールすることがないとは言えず、このような場合でも印刷処理の際のトラブルを避けるため、印刷処理を開始する際プリント制御ソフトのバージョンを確認する処理である。

【0106】同図に示す処理は、基本的には図19に示す点線枠で囲んだ処理及び判断と同じであり、クライアントから印刷データをプリンタ装置に出力して印刷処理を行う前、まずプリンタ装置からプリント制御ソフトのバージョンデータを読み出す(ステップ(以下、図20においてNで示す)1)。

【0107】次に、プリント制御ソフトのバージョンが正しいか判断する(N2)。この判断も前述と同様、ドライバプログラムにプリント制御ソフトのバージョンテーブルが含まれており、当該ドライバが読み込んだプリント制御ソフトの取り扱いが可能か否かを判断することによって実行する。ここで、プリンタ装置4-1のプリント制御ソフトが当該ドライバに対応したものであれば(N2がOK)、インストール処理を終了する。一方、当該ドライバによって取り扱えないプリント制御ソフトであれば(N2がNG)、プリンタ装置の動作条件設定値の送信をプリンタ装置に要求し、プリンタ装置から出力される動作条件設定値をアップロードして一時記憶する(N3)。

【0108】次に、新しいプリント制御ソフトをプリンタ装置に送信する(N4)。さらに、一時記憶したプリンタ装置の動作条件設定値を新しいプリント制御ソフト用に変更してプリンタ装置に送信する(N5)。以上の処理を行った後、印刷処理を実行する(N6)。

【0109】上述のように、印刷処理の際必ずクライ

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ント側のドライバにプリンタ装置のプリント制御ソフトは対応しているか確認し、プリント制御ソフトが対応していない場合にはプリント制御ソフトも新たなドライバに対応したプリント制御ソフトに更新することにより、確実に印刷不能等を回避することができる。

<第8実施形態例>次に、本発明の第8実施形態例について説明する。

【0110】図21は、第8実施形態例を説明するコンピュータネットワークを使用した印刷システムのシステム構成図である。本例は、前述の実施形態例と同様、コンピュータネットワークを使用した印刷システムであるが、例えばインターネットを介してプリンタ装置等のサービスセンター23にネットワークサーバ24が接続されている構成が異なる。ネットワークサーバ24は、サービスセンター23から最新版のプリンタドライバ、及びプリント制御ソフトの供給を受け、常時最新バージョンのプリンタドライバとプリント制御ソフトをストックしている。そして、ネットワークサーバ24は各クライアントのコンピュータのプリントドライバを定期的に更新し、プリンタ装置のプリント制御ソフトを定期的に更新する。以下、具体的に説明する。

【0111】ネットワークサーバ24のハードディスクHD24aにはA型、B型、C型の各プリンタ25A、25B、25Cのプリンタドライバ及びプリンタ制御用ソフト（以下、ファームウェアで示す）ファームウェアを格納する領域があり、またネットワークサーバ24はインターネット回線を介してプリンタメーカのサービスセンター23の情報発信源に接続されている。従って、ネットワークサーバ24内に格納されているプリンタドライバ及びファームウェアはサービスセンター23等から伝送される最新バージョンのソフトに書き換えられている。ネットワークサーバ24は、各プリンタの印刷処理時、プリンタ25A～25Cのコントローラ内（制御プログラム格納用フラッシュメモリ）に格納されているファームウェアのバージョンが、ネットワークサーバ24の格納するものと一致するか識別し、異なっていた場合には、最新のものに書き換え処理を行う。

【0112】また、各クライアント2a～2dがそれぞれ格納するプリンタドライバのバージョンも同様にネットワークサーバ24に格納されたものと比較識別し、異なっていればネットワークサーバ24内のものと書き換え処理を行う。

【0113】これによって、この発明のシステム内のプリンタドライバ及びファームウェアは常に最新バージョンのものが維持されることになる。各プリンタメーカは、プリンタドライバやファームウェアのプログラムをインターネット上で広く公開する例えばanonymous FTPサーバを設置しており、本発明のシステムのネットワークサーバ24は、インターネット（公衆回線等）を介して各プリンタメーカ等が用意したanonymous FTPサ

ーバにアクセスし、FTP(file transfer protocol)によってプログラムデータを転送し、ハードディスク24a内に取り込む事が出来る。本発明のネットワークサーバは、このような処理を定期的に行って、最新情報を常にハードディスク24a内に保持している。

【0114】このように構成することにより、クライアント2-1～2-nではプリントドライバが一定周期で自動的に更新され、プリンタ装置25A～25Cではプリント制御ソフトが一定周期で自動的に更新され、常に最新バージョンのプリントドライバ及びプリント制御ソフトによって印刷処理を行うことができる。

【0115】尚、前述の第1実施形態例、及び第2実施形態例において、プリントサーバ3の例えばハードディスク3aにプリント制御ソフトの更新要求を行う更新要求機能と、前記更新要求に対し、前記プリント制御ソフトの更新の有無を判断し、前記プリント制御ソフトの更新が必要な時、新たなプリント制御ソフトを送信する送信機能と、前のプリント制御ソフトを前記新たなプリント制御ソフトに更新する更新機能とを行う命令を含むプログラムを格納して構成してもよい。

【0116】このことはメーカーサーバ20のハードディスク20aについても同様である。

【0117】

【発明の効果】以上説明したように本発明によれば、電源投入時等において、新たなプリント制御ソフトに変わっていれば確実にプリント制御ソフトの更新処理が行われるので、常に最新バージョンのプリント制御ソフトによって印刷処理を行うことができる。

【0118】また、プリントサーバとメーカーサーバ間においても、タイマー等により一定時間間隔でプリント制御ソフトの更新処理を行うので、常に最新バージョンのプリント制御ソフトをプリントサーバに準備することができる。

【0119】また、新たなプリント制御ソフトが組み込まれた時その事実を印刷出力するので、ユーザは容易にプリント制御ソフトの更新を知ることができる。さらに、プリント出力のみならず、新たなプリント制御ソフトが組み込まれた時その事実をクライアントのディスプレイに表示するので、確実にプリント制御ソフトの更新を知ることができる。

【図面の簡単な説明】

【図1】第1実施形態例を説明する印刷システムの構成図である。

【図2】プリントサーバとプリンタ装置の接続構成を説明する図である。

【図3】プリント制御ソフトの更新処理を説するフローチャートである。

【図4】各種制御データのデータ構成を説明する図である。

【図5】ユーザサーバとハードディスクのメモリ構成を

説明する図である。

【図6】第2実施形態例を説明する印刷システムの構成図である。

【図7】第2実施形態例のプリント制御ソフトの更新処理を説するフローチャートである。

【図8】第2実施形態例の各種制御データのデータ構成を説明する図である。

【図9】メーカーサーバのメモリ構成を説明する図である。

【図10】ユーザサーバのメモリ構成を説明する図である。

【図11】第3実施形態例を説明する印刷システムの構成図である。

【図12】(a)はメーカーサーバのワークメモリの構成図であり、(b)は更新プリント制御ソフトデータのデータ構成を説明する図である。

【図13】プリント制御ソフトの更新処理を説するフローチャートである。

【図14】第4実施形態例を説明する印刷システムの構成図である。

【図15】第4実施形態例で使用する各種制御データのデータ構成を説明する図である。

【図16】第5実施形態例を説明するプリント制御ソフトの更新処理を説するフローチャートである。

【図17】第6実施形態例の印刷処理を説するフローチャートである。

【図18】第7実施形態例を説明するフロッピーディスクの構成である。

【図19】第7実施形態例を説明するフローチャートである。

【図20】第7実施形態例を説明するフローチャートである。

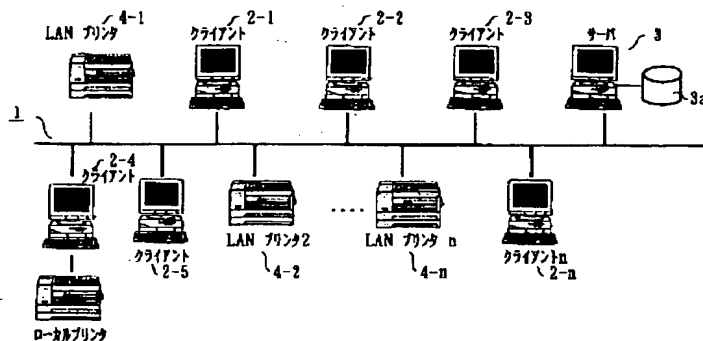
【図21】第8実施形態例を説明する印刷システムの構成図である。

【図22】従来例のプリント制御ソフトの更新処理を説明するフローチャートである。

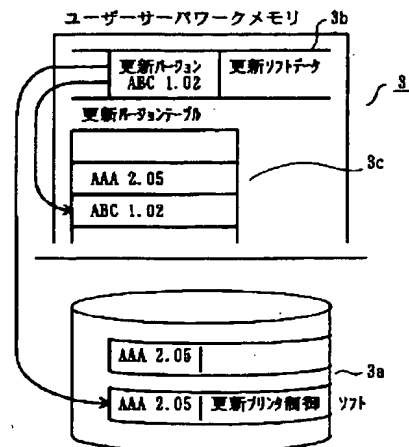
【符号の説明】

- 1 ネットワーク
- 2-1~2-n クライアント
- 3 プリントサーバ
- 3b エリア
- 3c 更新バージョンテーブル
- 4-1~4-n プリンタ装置
- 5 プリンタコントローラ
- 6 プリンタエンジン
- 7 MPU
- 8 不揮発性メモリ
- 9 システム・ワークメモリ
- 10 出力制御部
- 11 描画制御部
- 12 ディスプレイ
- 13 フォントメモリ
- 14 オペレーションパネル
- 15 仕様設定スイッチ
- 16 ネットワーク制御部
- 17 ローカルポート制御部
- 20 メーカーサーバ
- 20a ハードディスク
- 20b エリア
- 20c 更新バージョンテーブル
- 23 サービスセンター
- 24 ネットワークサーバ
- 25A~25C プリンタ装置

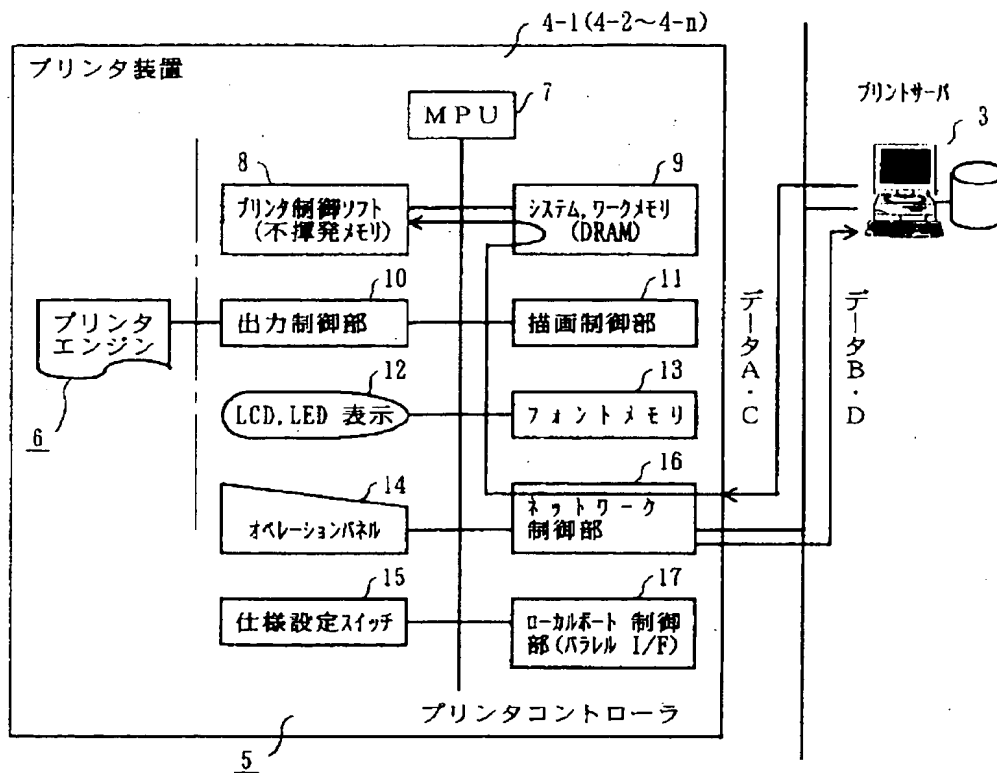
【図1】



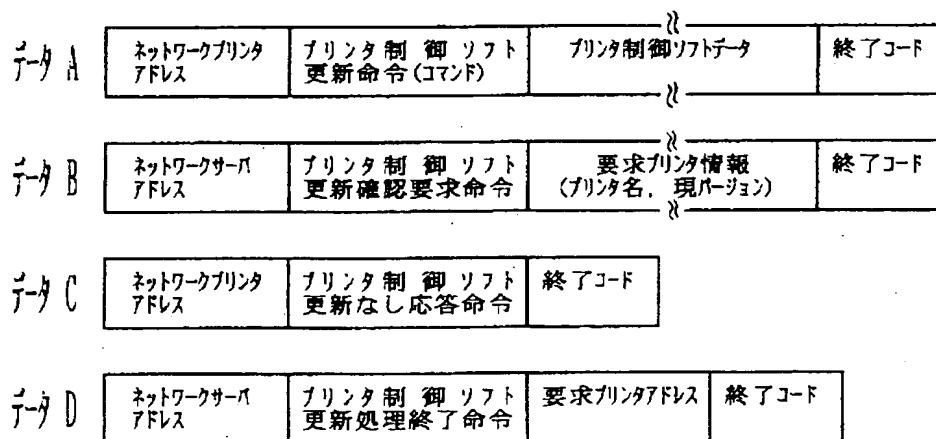
【図10】



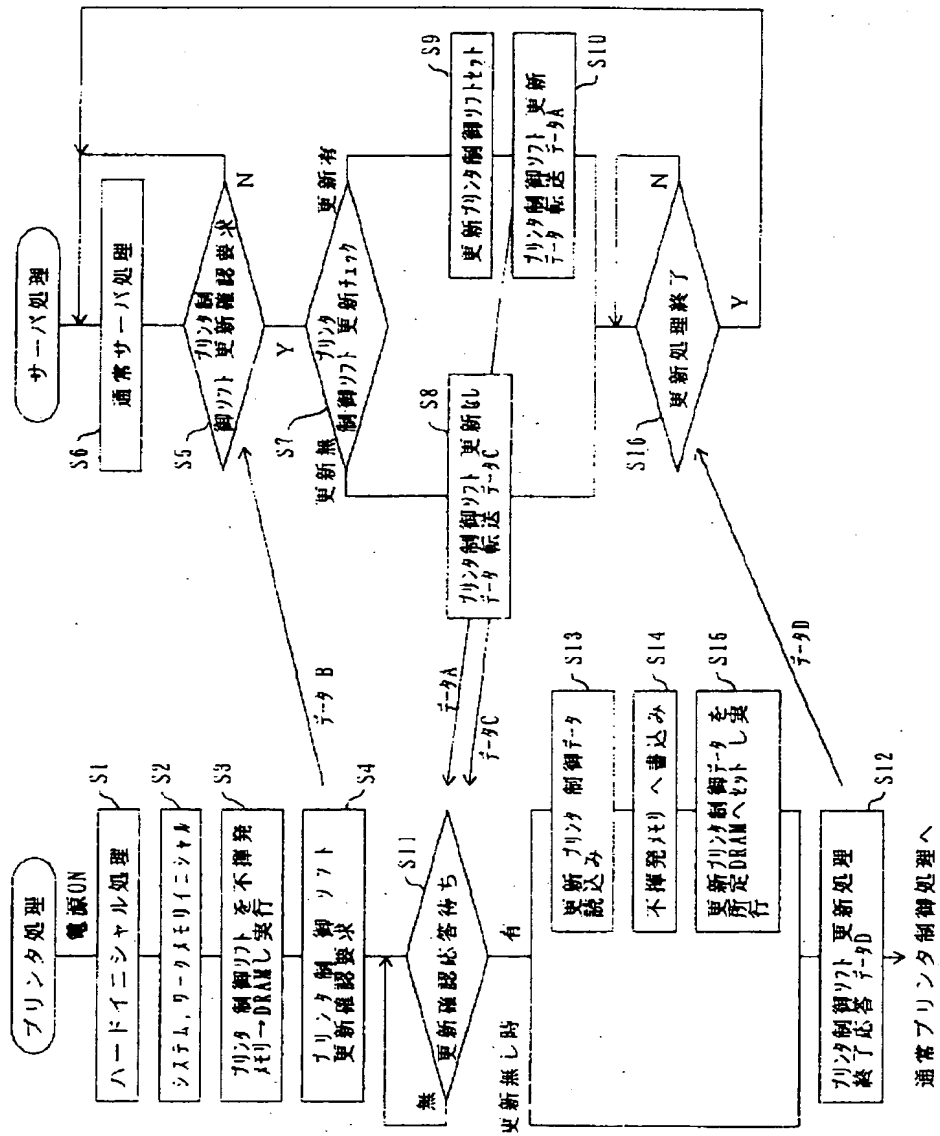
【図2】



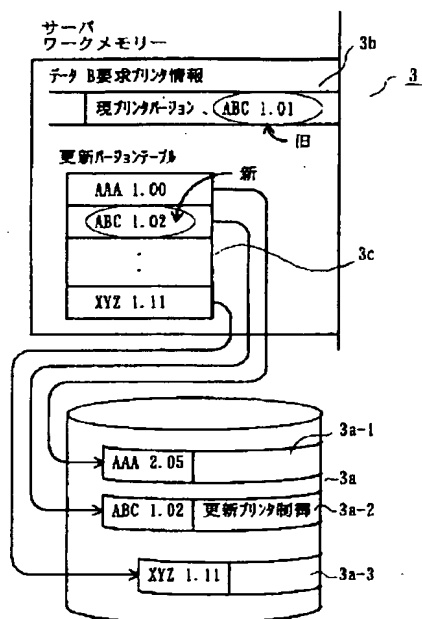
【図4】



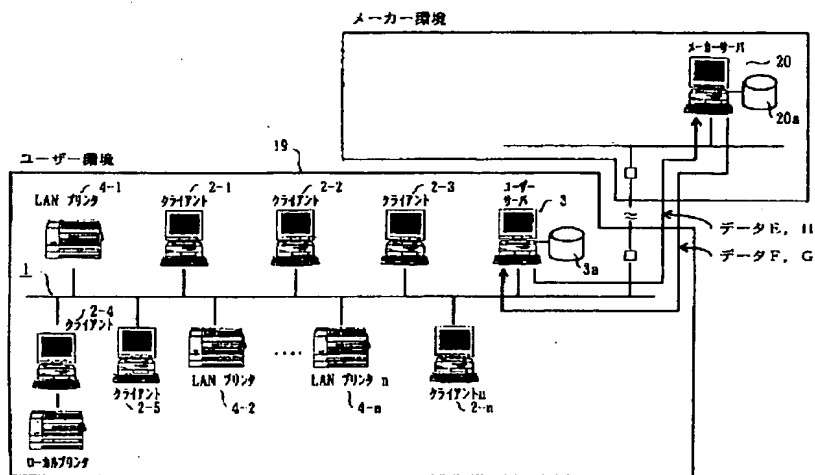
【図 3】



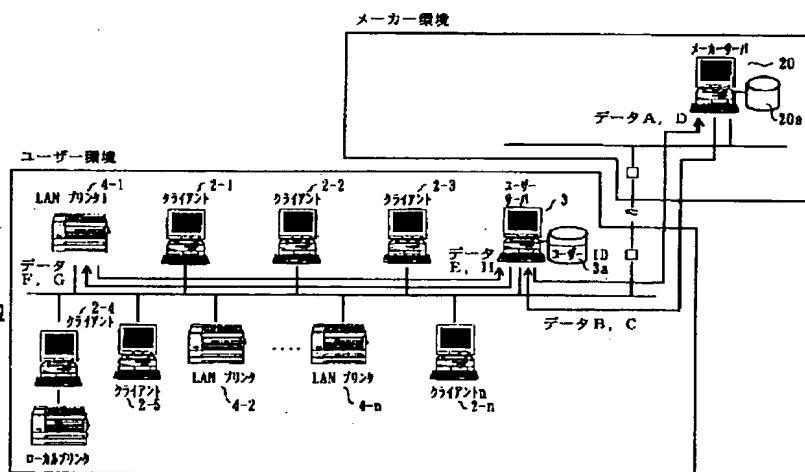
【図5】



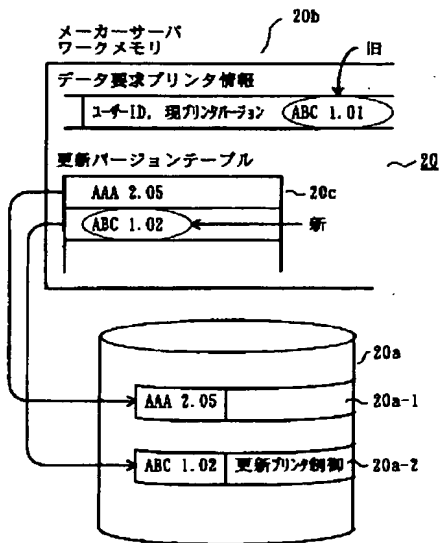
【図6】



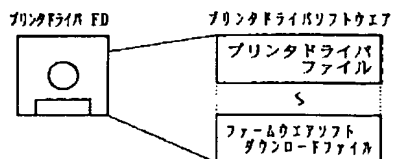
【図11】



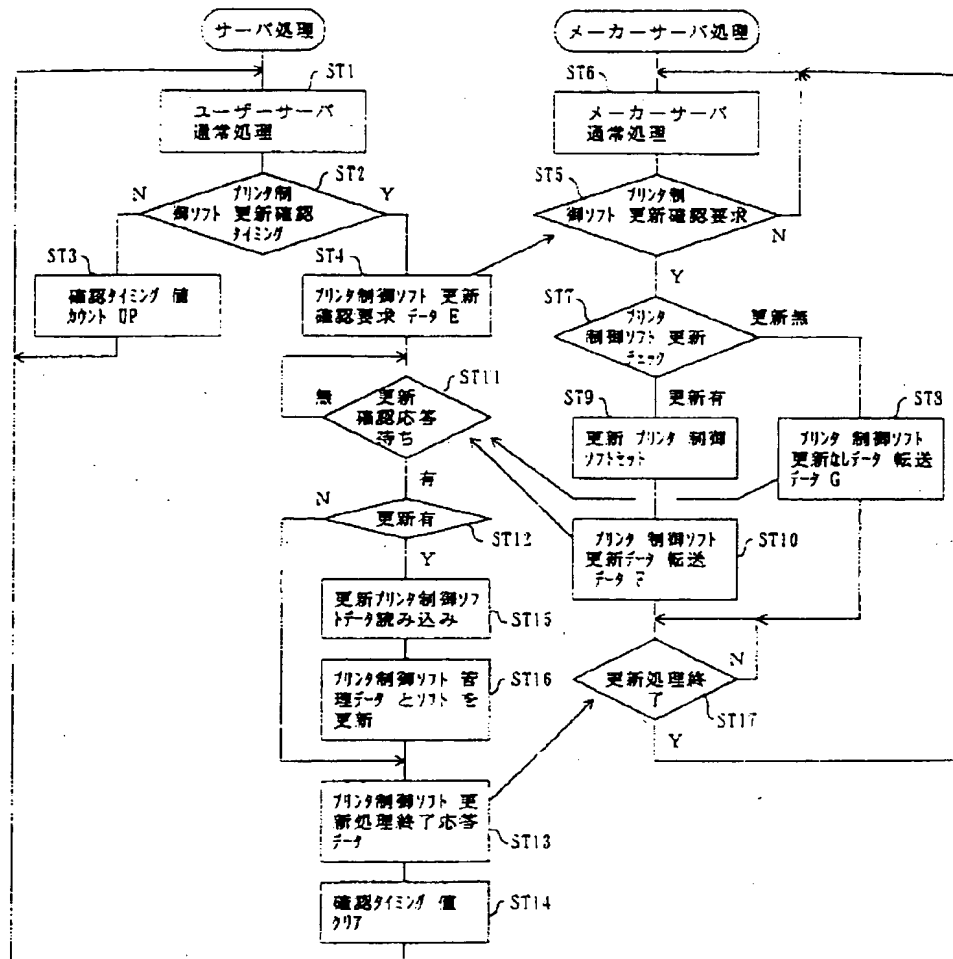
【図9】



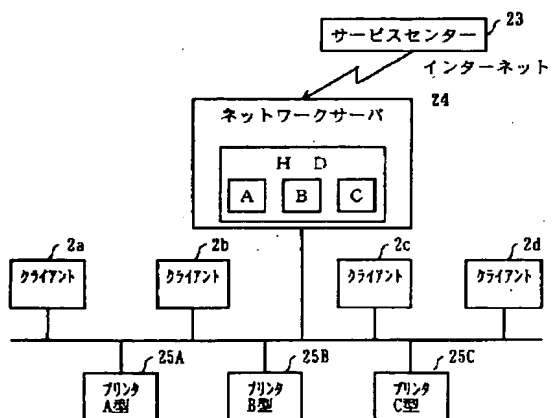
【図18】



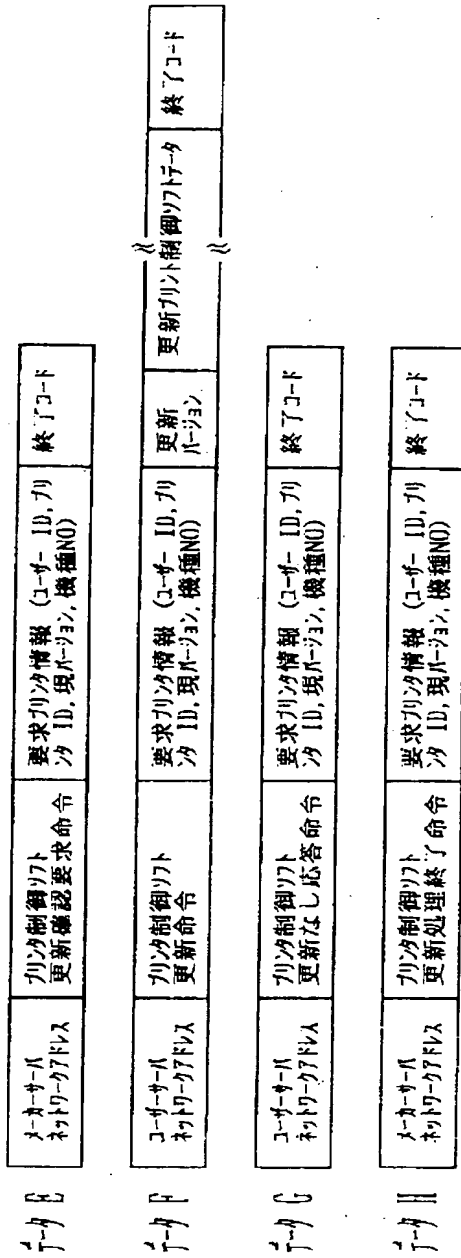
【図7】



【図21】

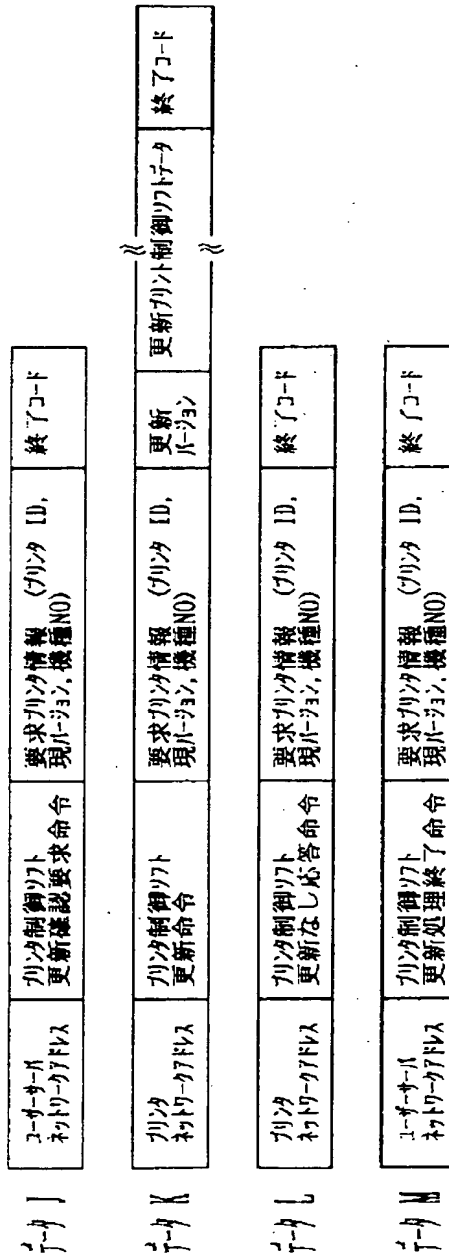


【図8】



【図15】

(ユーザサーバ ↔ ネットワークプリンタ)



【図12】

メーカーサーバ・ワークメモリ

更新確認要求データ

〜 20b

確認要求プリンタ情報			
ユーザID	プリンタID	機種NO	現在バージョン
ex) Y社	モデル y2	500	ABC 1.02

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(a)

ユーザID	プリンタID	機種NO	現在バージョン	DISK7Fレス
Y社	モデル y1	対象なし	AAA 2.01	AD 1
	モデル y2	1~1000	ABC 1.03	AD 2
	モデル y3	1000~	ABC 2.01	AD 3
:	:	:	:	:
X社	モデル	特になし	XXX 1.00	AE 1
	モデル	特になし	YYY 2.00	AE 2

〜 20c

更新プリンタ制御ソフトデータ

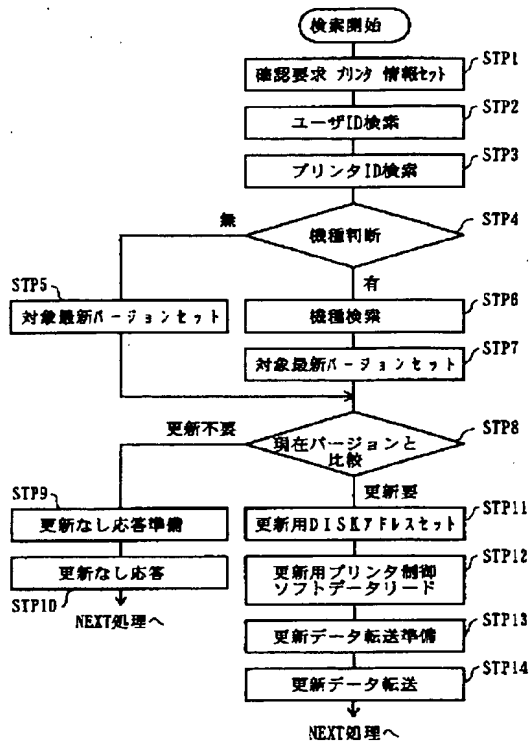
(b)

DISK7Fレス	ユーザID	プリンタID	号機NO	最新バージョン	プリンタ制御ソフトデータ
AD 1	Y社	モデル y1	対象なし	AAA 2.01	AAA 2.01 用
AD 2	Y社	モデル y2	1~1000	ABC 1.03	ABC 1.03 用
AD 3	Y社	モデル y3	1000~	ABC 2.01	ABC 2.01 用

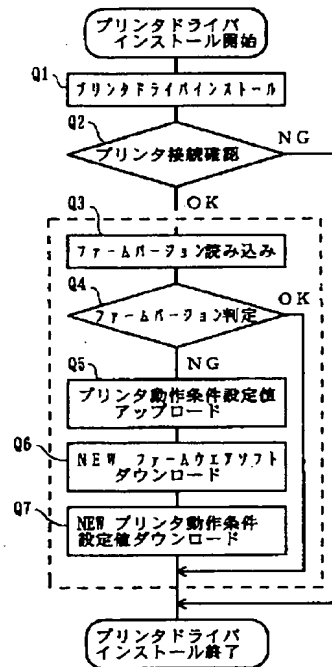
〜 20a

AE 1	X社	モデル x1	特になし	XXX 1.00	XXX 1.00 用
AE 2	X社	モデル x2	特になし	YYY 2.00	YYY 2.00 用

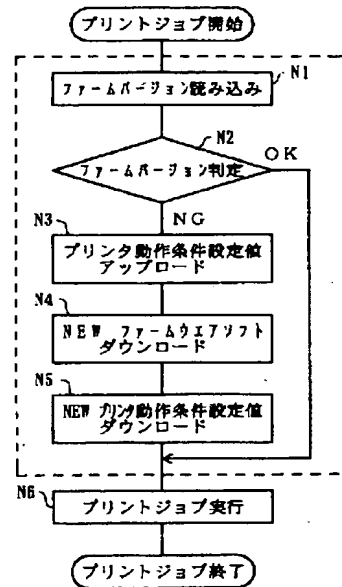
【図13】



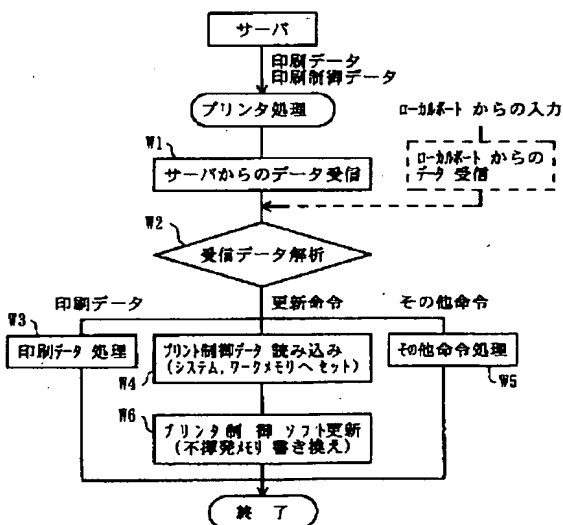
【図19】



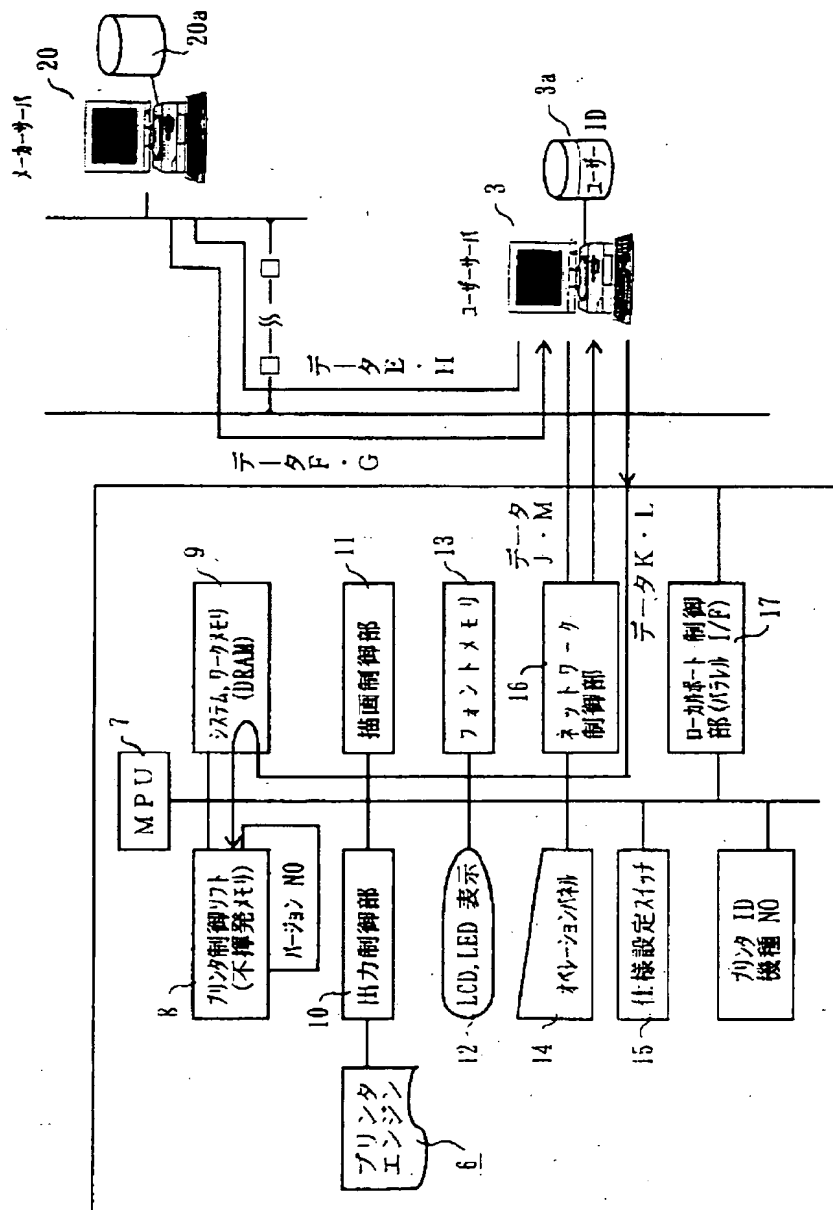
【図20】



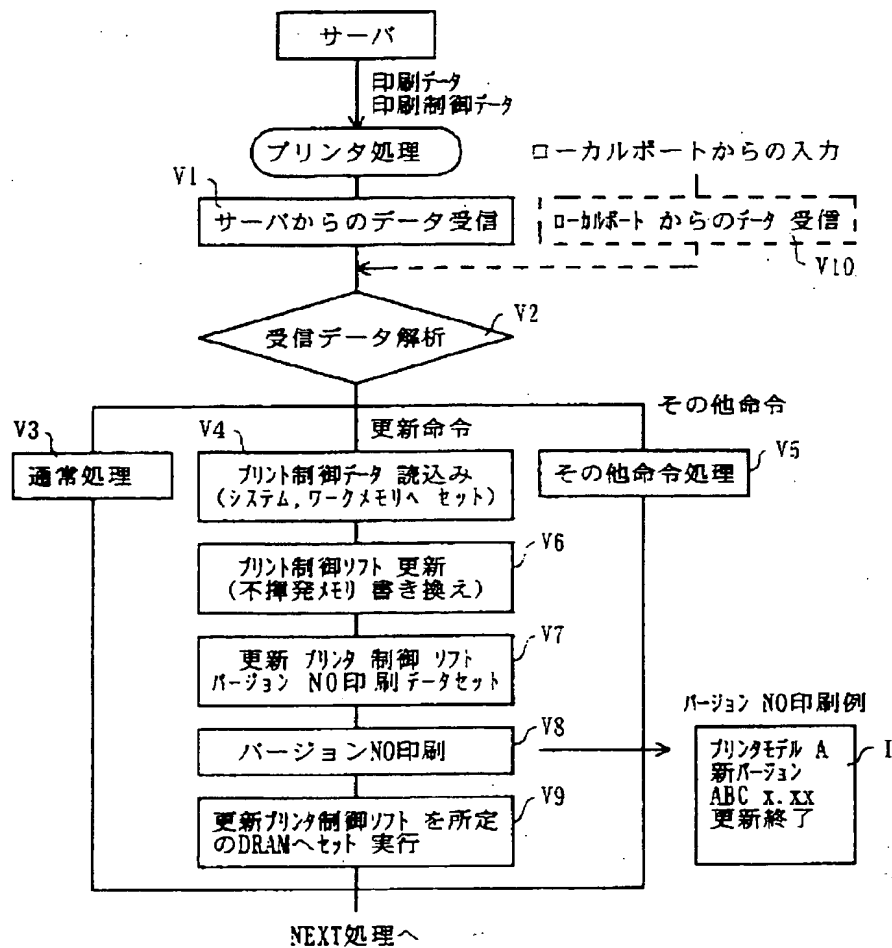
【図22】



【図14】



【図16】




```

graph TD
    Start([ ]) --> U1{クラライアント接続?}
    U1 -- No --> End1([RET])
    U1 -- Yes --> U2{プリンター有?}
    U2 -- No --> U6{インストール要求}
    U2 -- Yes --> J1((1))
    U6 -- No --> U7[インストール]
    U7 --> U8{ROM ver OK?}
    U8 -- No --> U9{書き換え必要?}
    U9 -- No --> U10{書き換え?}
    U9 -- Yes --> J2((4))
    U10 -- No --> U11[通常処理]
    U10 -- Yes --> U12[フラッシュ ROM 書き換え処理]
    U12 --> U13[書き換えフラグをEEPROMへ登録]
    U13 --> U14[プリンターリセット]
    U14 --> U15{ジョブ ON?}
    U15 -- No --> J2
    U15 -- Yes --> U16[ジョブリセット]
    U16 --> U17[自己印字]
    U17 --> U18[自己印字終了を記憶]
    U18 --> U19{P&P or Samp?}
    U19 -- Yes --> J3((3))
    U19 -- No --> J2
    J1 --> U3[アプリケーション起動]
    U3 --> U4{ROM ver 比較}
    U4 -- 不要 --> U5[通常処理]
    U5 --> RET1([RET])
    U4 -- 書き換え必要 --> J4((4))
    J4 --> U20[プリンター情報作成]
    U20 --> U21[クライアントへ通知]
    U21 --> U22[クライアント PC]
    U22 --> U23[プリンターファームウェアをユーザに知らせる]
    U23 --> RET2([RET])

```

The flowchart illustrates the printer control logic. It begins with a connection check (U1). If no client is connected, it returns (RET). If connected, it checks if the printer is present (U2). If not, it prompts for installation (U6), which leads to installing the driver (U7) and checking the ROM version (U8). If the ROM version is not OK, it checks if rewriting is needed (U9). If yes, it proceeds to rewrite the flash ROM (U12), register the flag (U13), reset the printer (U14), and start a job (U15). If the job is on, it resets (U16), prints self-test (U17), stores completion (U18), and checks for P&P or Sample mode (U19). If in that mode, it proceeds to step 3; otherwise, it loops back to step 2. If the printer was already present (U2=Yes), it starts the application (U3) and compares ROM versions (U4). If no update is needed, it goes to normal processing (U5) and returns (RET). If an update is needed, it proceeds to step 4, where it creates printer information (U20), notifies the client (U21), updates the PC (U22), informs the user of the firmware update (U23), and returns (RET).

フロントページの続き

(72)発明者 鈴木 誠

東京都東大和市桜が丘 2 丁目 229 番地
カシオ電子工業株式会社内